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ABSTRACT

These 10 papers were commissioned for a conference to discuss such questions as: If the military has to restructure its work force, how easily will it manage this transition? How well will the affected employees do in the labor market? and How will the defense industry and educational institutions respond to the need for transition? After an introduction (Nevzer Stacey), the following papers are provided: "Cutting Recruits: A Profile of the Newly Unqualified" (David Boesel); "Crew Cuts: Effects of the Defense Drawdown on Minorities" (Janice Laurence); "Impact of the Military Drawdown on Youth Employment, Training, and Educational Opportunity" (David Grissmer); "Educational Resources Available for Transition of Servicemembers" (Clinton Anderson); "The Use of NOCTI (National Occupational Competency Testing Institute) Examinations to Assist Military Personnel Moving into the Civilian Work Force" (Scott Whitener); "Competency Requirements of Managerial Jobs in the Public and Private Sector: Similarities and Differences" (Joyce Shields, Joanne Adams); "Lessons from the Past: Mitigating the Effects of Military Cutbacks on Defense Workers" (Lois Lembo, Judith Philipson); "Firm-based Education and Training of Workers: A Case Study of the Xerox Corporation" (Burt Barnow, Amy Chasanov); "The Impact of Military Drawdowns on Student Assistance Programs" (Meredith Ludwig, Holly Hexter); and "Effect of Veterans Benefits on Veterans' Education and Earnings" (Joshua Angrist). (CML)

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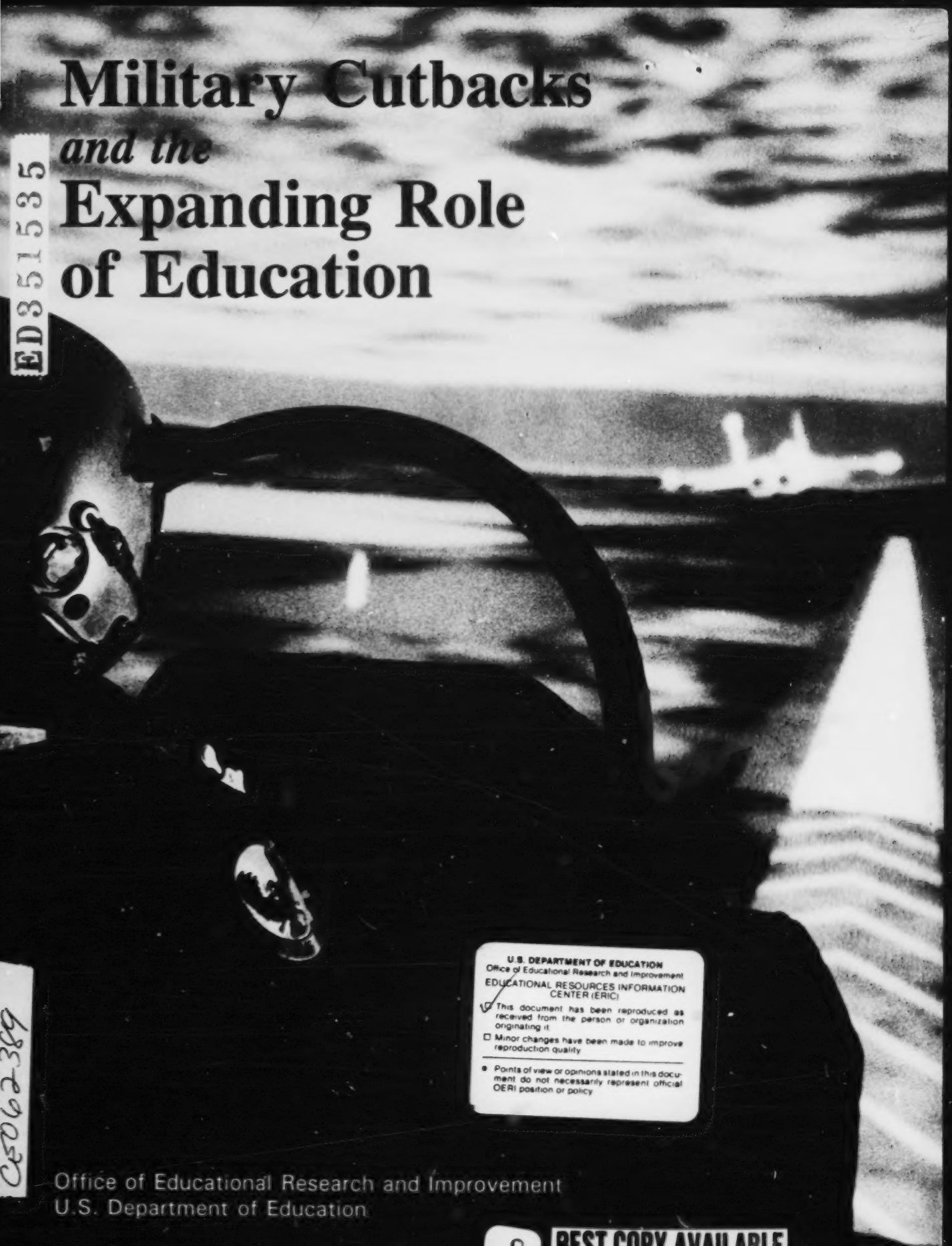
# Military Cutbacks *and the* Expanding Role of Education



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# Military Cutbacks *and the* Expanding Role of Education

Nevzer Stacey

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# Introduction

Nevzer Stacey

If the military has to restructure its workforce, and consequently reduce the number of its employees, how easily will it manage this transition? How well will the affected employees do in the labor market? How will the defense industry and educational institutions respond to the need for transition? The answers to these questions are the subject of this book.

The Office of Educational Research and Improvement of the U.S. Department of Education commissioned 10 papers and convened a conference in May 1991 to discuss them. The papers focused on: (1) the people who are likely to be affected by the planned drawdown, (2) the mechanisms or institutions that can help people leaving the military to move into the civilian market, (3) the past experience of the defense industry in dealing with drawdowns, and (4) the role of educational institutions during this transition.

The first set of three papers was presented to the conference panel "Post-Gulf War Cutbacks in the Military and Their Implications for Non-College Bound Youth Entering the Military." In a paper entitled "Drawdown Scenarios and Personnel Implications," David Grissmer discusses the drawdown and the different strategies for achieving it. He then uses quantitative models of the Armed Forces personnel system to estimate the employment, training, and educational effects of different drawdown scenarios. Among his conclusions are that fewer young people will be employed by the military, and thus that fewer will receive occupational training in military skills and access to GI Bill educational benefits.

The second paper, "Crew Cuts: Effects of the Defense Drawdown on Minorities," was prepared by Janice Laurence of Human Resources Research Organization and delivered by Mark J. Eitelberg. Minorities, especially blacks, may experience negative effects as a result of cutbacks, since they are over-represented in the Armed Services, particularly the Army. According to Laurence, simulations of force cuts by tenure and job groupings do not show minorities to be at a disadvantage relative to whites. However, it appears that major effects may be felt by the minorities at the point of entry.

The third paper, "Cutting Recruits: A Profile of the Newly Unqualified," concentrates on the entering applicants. David Boesel simulates the characteristics of the young men and women who would have enlisted in the military during fiscal years 1991 through 1995 but will not do so because of the drawdown in military forces. Since all these young men and women are high school graduates, what they may lack in aptitude may be compensated for by their credentials. According to Boesel, high school graduation is required for enlistment because the graduates are much more likely than nongraduates to complete their first term of service. He states that the military experience is likely to be an important asset in the labor market. In summary, the people most affected by the drawdown may be those whom the "newly unqualified" displace on the job ladder—those with even less education and few if any job

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Note: The author is a senior education research analyst in the Office of Research, U.S. Department of Education.

skills. Many of these are teenagers or young adults who have dropped out of high school and who are already on the margins of American society.

The second conference panel, "Educational Resources Available to Individuals Making a Transition from the Military to the Civilian Sector," projected much brighter prospects for the newly released who take with them the training and educational benefits they received while they were in the military. Clinton Lee Anderson's paper "Educational Resources Available for Transition of Service Members" presents the vast array of services available to men and women who leave the military. Ranging from "pre-separation counseling services" to "education incentive programs" administered by the Department of Veterans Affairs, the benefits established for military leavers are vast in number. Although these educational resources are being used by servicemembers and veterans, limitations and difficulties exist. This paper makes some recommendations to improve the existing situation.

Scott Whitener's paper, "The Use of NOCTI Examinations to Assist Military Personnel Moving into the Civilian Workforce," is very different from the macro-analysis of educational resources available to military leavers. He describes a battery of tests that are available to military personnel in their transition to civilian sector occupations. The National Occupational Competency Testing Institute (NOCTI), which develops and administers these tests, appears to be a viable route for diagnosing the competencies of military personnel and matching them with their civilian counterparts. Also discussed in this paper is the training that the military provides to prepare enlisted personnel for occupational specialties. Corresponding educational competencies in civilian programs and the types of educational institutions which provide them are examined. In the third paper for this panel, "Competency Requirements of Managerial Jobs in the Public and Private Sector," Joyce Shields and Joanne Adams discuss the similarities and differences of job competencies in both sectors and present an approach for training and developing competencies, to assist in the transition of civilian public sector employees to the private sector.

The third set of papers differed slightly from the others. They focus on the role of education and training in defense-related and non-defense-related companies. In "Lessons from the Past: Mitigating the Effects of Military Cutbacks on Defense Workers," Lois Lembo and Judith Philipson discuss how industry initiatives to retrain and re-educate workers laid off from defense companies have made significant contributions to local and state economies through early notification and job placement counseling. According to this paper, one of the most important long-term initiatives is planning for and establishing an economic infrastructure in which civil-military integration and the production of "dual-use" products are dominant—providing for effective employment transition and easier market conversion as economic and defense priorities change. Burt Barnow and Amy Chasanov's paper, entitled "Firm-Based Education and Training of Workers: A Case Study of the Xerox Corporation," provides an excellent discussion of how a company uses its education and training strategically and comprehensively and thus is able to maintain its various programs regardless of business cycle conditions.

The fourth panel was "Effects of Downsizing on Postsecondary Institutions and on the U.S. Workforce." "The Impact of Military Drawdowns on Student Assistance Programs," prepared by Meredith Ludwig and Holly Hexter, focuses on the participation and financial support of military personnel in postsecondary institutions. It outlines policy proposals for expanding or realigning current assistance programs to meet the education and training needs of groups within the military or with the propensity to enlist. They argue to strengthen the nexus between the military and higher education communities. Given the fact that newly released service members may opt to combine school with work or go to school full time, veterans benefits may be an appropriate vehicle to achieve these goals. The services clearly see veterans benefits as an essential recruitment tool, and the high rate of sign-up indicates that service members generally expect to use those benefits. The last paper, "The Effects of Veterans Benefits on Veterans' Education and Earnings," written by Joshua Angrist, reports that a majority of Armed Forces veterans make use of the subsidized training and educational benefits provided by the Department of Veterans Affairs. The effect of these benefits on educational attainment and civilian earnings seems to be measurable. It increases schooling by 1.4 years and produces a grade

increment worth roughly 4.3 percent in earnings, so that veterans benefits raise annual earnings by approximately 6 percent. This is observable primarily for those who attend college or graduate school.

At the beginning of this investigation we listed a number of questions that needed to be answered. The papers in this volume answer some questions fully, some partially, and some not at all. The lack of studies to measure the effects of workplace-provided incremental education and training is a serious obstacle to understanding education's role in the workplace. Review of existing literature also indicates that we have done very little thinking about how educational policy can be an effective tool in restructuring workplaces. What we attempted to do with the conference was to examine an employer's response to changing times and needs. In this case, it was the military, a very large employer with integrated training and education policies, serving a diverse population group who are expected to perform very simple and extremely complex tasks. It is up to the reader to decide whether there are lessons from this examination for other workplaces, and it is also up to the reader to determine how much modification is appropriate to make this transition smooth.

# Cutting Recruits: A Profile of the Newly Unqualified

David Boesel

## Introduction

As the military threat from the Soviet Union and the Warsaw Pact recedes, U.S. national priorities are shifting. It seems likely that in the long run a smaller share of the nation's resources will be required to defend its security and vital interests, allowing more to be devoted to much-needed investments in education, infrastructure, and other essentials of economic revitalization. The defense budget is being reduced, and administration plans envision continuing reductions through Fiscal Year 1995. An integral part of this reduction is a drawdown of the Department of Defense (DOD) workforce, including 2 million active duty military members and 1 million civilian employees.

A 25 percent cutback in the number of both military and DoD civilian personnel is anticipated over the next 5 years—about 500,000 active duty military members and 250,000 civilian personnel. Most of this cutback will not involve the involuntary removal of people already in the military or in the civilian workforce. Rather, it will be handled primarily by reductions in hiring, normal attrition, and incentives to leave, such as early retirement. Job losses will constitute a relatively small proportion of the drawdown.

The greater problem is that the nation's largest employer is retrenching and that over 5 years three-quarters of a million people—approximately 150,000 per year—will have to find jobs elsewhere. (These estimates do not include the cutbacks in defense industries, the secondary effects of military base closings, or the other ripple effects of reduced defense spending.) In addition, since the military is the nation's largest trainer of personnel and a major provider of postsecondary education benefits, many who are unable to enlist will also have to look elsewhere for training and education opportunities. In the shift of national priorities and resources, new job and training opportunities will no doubt be created, and the labor market will eventually find a new equilibrium. In the meantime, meeting these new training and education needs and helping people find jobs outside of the defense complex will be serious policy concerns of the federal government.

This paper focuses on one segment of those who will no longer have employment in the Department of Defense—the young men and women who would have enlisted in the active duty military had the drawdown not occurred but now will not do so. Since the services tend to select the most highly qualified applicants at any given time, those unable to enter the military because of the force reductions will most likely be excluded because of their relatively low levels of qualification for service. Hence, they will be called the "newly unqualified."

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Note: The author is a senior education research analyst with the Office of Research, U.S. Department of Education.

This paper attempts to describe the demographic and aptitude characteristics of the newly unqualified. Who are they likely to be? How many men and women? How many whites, blacks, and members of other racial minorities? What skills and talents, or skill and talent deficits, will they bring to the civilian training and labor markets? What regions of the country will be most affected? These and similar questions will be addressed in the sections that follow. First, however, it is useful to examine some of the details of the military cutback and to explain how one can make informed guesses about the characteristics of people who, as a result of the drawdown, will not enter the military either because they apply and are rejected or because they do not apply in the first place.

The Bush administration has proposed to reduce active duty military manpower from about 2 million to 1.5 million active duty members over the next 5 years. Though plans for precise year-by-year reductions are not yet complete, it is expected that end strength will be cut by approximately 100,000 per year over the period FY 1991 through FY 1995. (Because of the Persian Gulf crisis, only 80,000 billets are now scheduled to be cut in FY 1991. It is assumed that the difference will be made up in subsequent years, although the future consequences of the Middle East deployment for military manpower are not entirely predictable.) It is likely that officers will be reduced roughly in proportion to their numbers, approximately 13 percent of the total or around 65,000 billets. This means that some 435,000 slots will be taken out of the enlisted force, if current plans are carried out.

Most of the reductions in the enlisted force will come from accessions (new recruits), although the exact mix of cuts from accessions and from the experienced force has yet to be determined. Reducing the number of new recruits too heavily would distort the structure of the active forces, creating a gap in the age/grade distribution that would move across the years. According to the estimates in this paper, a reduction of approximately 316,000 accessions, properly apportioned among the services over the 5-year period, would enable them to meet their lower end-strength goals without unduly distorting the age/grade structure of the force. Thus, accessions would account for about 73 percent of enlisted reductions.

The other 27 percent, or about 119,000, would come from cuts in the experienced force rather than from new recruits. Most of these would result from reenlistments denied to personnel who have completed their first term of service. A small number would come from those with more than 20 years of service who are eligible for retirement. And a small number would come from those in the experienced career force with between 6 and 20 years service.

To estimate the number of recruit reductions by service and year through FY 1995, we compare military manpower projections developed before the reduced threat from the Warsaw Pact was taken into account (the "old" projections) with current projections. The old projections are set forth in the services' 1990 Program Objective Memoranda (POMs). The new projections are based on a computer model developed for the Department of Defense by the Rand Corporation. The difference between the old and new projections for the 5-year period constitutes an estimate of each service's reduction in new recruits.

FY 1989 recruits who scored in the lower ranges of the Armed Forces Qualifying Test (AFQT) were selected to simulate the newly unqualified. Military accession procedures are designed to screen out the least qualified applicants at any given point in time. The Army and the Air Force have computerized selection procedures that constantly assess the qualifications of applicants, making it possible to select the most promising for enlistment. The Navy and Marines use similar selection procedures, although they are not computerized. The AFQT, which measures verbal and math skills, is key to this process. While the education level of the applicants is also important, almost all new recruits are high school graduates. AFQT and related test scores provide a more flexible and discriminating means of selecting on the basis of qualification as supply and demand shift over time.

In order to simulate a *demographic* profile of the newly unqualified, a random sample of 40,000 recruits (10,000 from each service) was selected from the Defense Manpower Data Center's FY 1989 accession files. A given service's percentage cut in new recruits over the next 5 years was determined—

say, an X percent reduction. Then the X percent of sampled FY 1989 recruits in that service with the lowest AFQT scores were selected to represent the newly unqualified. These cases were weighted up to the 5-year reduction totals for each service, and the weighted totals were combined.

To examine the *social class backgrounds* of the newly unqualified, FY 1989 data from the DoD Survey of Recruit Socioeconomic Backgrounds are used.[1] In this survey, samples of new recruits are asked questions about their parents' education, occupations, and other socioeconomic attributes. The procedures used to simulate the newly unqualified from the survey data were the same as those employed with the sample of 40,000 recruits.

To permit comparison of the newly unqualified with civilians, FY 1989 Current Population Survey (CPS) data are used. For the demographic profile, the comparison group is a nationwide sample of noninstitutionalized civilian youth aged 18 to 24. Since the data in the socioeconomic survey concern the parents of recruits, rather than the recruits themselves, the CPS comparison groups are made up of the male and female parents who have children between the ages of 14 and 21 living at home.

FY 1989 military and civilian data are used for two reasons. First, FY 1989 can be considered the last "normal" year of recruiting (the Berlin Wall fell in November 1989) and hence provides a good starting point. Second, extensive recruit and civilian data are readily available for FY 1989, permitting comparison of the (simulated) newly unqualified with all recruits and with a nationwide sample of civilians in that year. Estimating the numbers of the newly unqualified and describing their characteristics is necessarily an exercise in the hypothetical. Essentially, we are comparing FY 1991 through FY 1995 projections developed at two different points in time under vastly different strategic circumstances. Obviously, manpower plans could change again in the future.

This paper accepts the assumptions implicit in the POM projections about labor market conditions that affect military applications and enlistments. One such assumption is that the cohort of 18- to 21-year-olds will continue to decline until around 1995, when the decline is expected to bottom out. Economic recession and unemployment may be turn out to be more serious than assumed in these projections. If so, there will be a tendency for the supply of applicants to increase, enabling the military to raise enlistment standards while still meeting accession goals. On the other hand, smaller recruiting budgets, such as that authorized for FY 1991, will tend to reduce the supply of applicants, creating pressure for the services to lower their standards in order to meet their goals. Indeed, many newly unqualified individuals of the type simulated in this paper may not apply at all, because of reduced recruiting efforts. Nevertheless, these individuals will add to the number of youth seeking training and jobs outside the military because of the reduced number of accession billets. One could elaborate the model used in this paper by making different assumptions about the labor market and recruiting efforts, among other things. However, the paper assumes the conditions prevailing in FY 1989.

In all, the data in the paper illustrate what the newly unqualified might look like if some 316,000 recruit positions were cut between now and 1995 and if those unable to enter the military resembled FY 1989 recruits in the lower AFQT ranges. The data should not be regarded as referring to aggregates of specific individuals and should not be seen as a prediction of future outcomes. Nevertheless, the paper should provide a reasonably good profile of those who will not have military training or military jobs as a result of the drawdown.

# Demographic Characteristics of the Newly Unqualified

## Age

Those newly unqualified for service, like the FY 1989 recruits, are of course much younger than the general population (see Table 1). Most are young adults in the 18 to 20 year age range. The mean age of

the newly unqualified is 19.8 years, and that of all recruits is 19.9 years. Typically, members of both groups are recent high school graduates entering the full-time labor force for the first time.

**Table 1.—Age of selected military and civilian populations**

| Age | Newly unqualified | FY 1989 recruits | All civilians |
|---|---|---|---|
| <18 | 4 | 5 | 26.3 |
| 18 | 31 | 34 | 1.5 |
| 19 | 27 | 23 | 1.5 |
| 20 | 13 | 12 | 1.4 |
| 21 | 7 | 7 | 1.4 |
| 22 | 4 | 5 | 1.4 |
| 23 | 4 | 4 | 1.5 |
| 24 | 2 | 3 | 1.6 |
| 25+ | 7 | 7 | 63.4 |
| Total | 100 | 100 | 100.0 |

There is a slightly higher proportion of 19-year-olds among the newly unqualified than among all recruits and a slightly lower proportion of 18-year-olds. This may reflect a tendency on the part of potential recruits with relatively low AFQT scores to apply later than others, either because they are slightly older when they graduate from high school or because they are more likely to turn to the military after unsuccessfully searching for jobs in the civilian economy.

## Sex

Males predominate among the newly unqualified, as they do among all recruits (see Table 2). Approximately seven-eighths of both groups are males. On the other hand, among civilians aged 18 to 24, females slightly outnumber males. The somewhat larger proportion of males among the newly unqualified than among all recruits reflects the fact that the women selected for enlistment have somewhat higher AFQT scores than the men, a consequence of service constraints on the number of billets open to women.

**Table 2.—Sex of selected military and civilian populations**

| Sex | Newly unqualified | FY 1989 recruits | Civilians 18 to 24 |
|---|---|---|---|
| Male | 88 | 86 | 49 |
| Female | 12 | 14 | 51 |
| Total | 100 | 100 | 100 |

## Race/Ethnicity

The newly unqualified are almost as different from the youth population in terms of race as they are in terms of age and gender. The unqualified are about three times as likely to be black as all youth aged 18 to 24 (see Table 3). Some 41 percent of the newly unqualified are black, as compared to 14 percent of civilian youth. Further, because of an association between race and AFQT scores, the newly unqualified

are almost twice as likely to be black as are all recruits. Members of other racial minority groups are also heavily represented among the unqualified, when compared to their representation in the youth population. In all, about half of the newly unqualified are members of a racial minority.

**Table 3.—Race of selected military and civilian populations**

| Race | Newly unqualified | FY 1989 recruits | Civilians 18 to 24 |
|---|---|---|---|
| White | 51 | 73 | 82 |
| Black | 41 | 22 | 14 |
| Other | 8 | 5 | 4 |
| Total | 100 | 100 | 100 |

The proportion of Hispanic youth among the newly unqualified is a little lower than in the youth population (see Table 4). Some 9 percent of the unqualified are Hispanic, as compared to 11 percent of civilian youth aged 18 to 24. This relatively low representation occurs because Hispanic youth are underrepresented among recruits in general; in FY 1989, only 6 percent of recruits were Hispanic. The proportion of Hispanics among the newly unqualified is higher than among all recruits because Hispanic youth do not score as well as non-Hispanics on the AFQT test.

**Table 4.—Hispanic/Non-Hispanic background of selected military and civilian populations**

| Hispanic/Non-Hispanic | Newly unqualified | FY 1989 recruits | Civilians 18 to 24 |
|---|---|---|---|
| Hispanic | 9 | 6 | 11 |
| Non-Hispanic | 91 | 94 | 89 |
| Total | 100 | 100 | 100 |

Combining Hispanics of all races with others who are not white, we find that the majority (53 percent) of the newly unqualified are members of racial or ethnic minority groups, while only 47 percent are non-Hispanic whites.[2]

## Tested Aptitude

The military services use the Armed Services Vocational Aptitude Battery (ASVAB) to determine the enlistment eligibility of applicants and to assign qualified recruits to military jobs. The ASVAB consists of 10 subtests that measure arithmetic reasoning, numerical operations, mathematical knowledge, word knowledge, paragraph comprehension, coding speed, general science, mechanical comprehension, electronic information, and automotive shop information. The test has been empirically validated as a predictor of performance in training courses and in military occupations.

Four of the ASVAB subtests (arithmetic reasoning, numerical operations, word knowledge, and paragraph comprehension) are combined to produce the Armed Forces Qualification Test (AFQT). The AFQT scores are usually grouped into five broad categories based on the percentile score ranges shown in Table 5. Applicants in Category I, the 93rd through 100th percentiles, constitute the top 8 percent of test takers. Those in Category II, the next 28 percent, fall in the 65th to 92nd percentile range. The top two categories are considered "well above average." Category III represents "average" trainability and is made up of the middle 34 percent of test takers, those in the 31st through the 64th percentile range. (The Army currently sorts Category III into two subcategories: IIIA includes percentile scores from 50 through 64 and IIIB includes percentile scores from 31 through 49.) At the lower end of the scale are

applicants in Category IV (the 21 percent in the 10th through 30th percentiles), who are considered "below average" and those in Category V, who make up the bottom 9 percent of test takers and are considered "well below average." Category V applicants are disqualified from military service by law.

**Table 5.—Armed Forces Qualification Test (AFQT) categories by corresponding percentile score ranges**

| AFQT category | Percentile score range |
|---|---|
| I | 93–100 |
| II | 65–92 |
| IIIA | 50–64 |
| IIIB | 31–49 |
| IV | 10–30 |
| V | 1–9 |

By definition, the newly unqualified are in the lower range of the AFQT distribution, as shown in Table 6. (The civilian data in Table 6 come from a nationwide administration of the ASVAB to a large random sample of civilian youth in 1980.[3] The use of these data for comparative purposes assumes that the current distribution of aptitudes among youth nationwide is about the same as it was in 1980, a fairly reasonable assumption.)

**Table 6.—AFQT scores of selected military and civilian populations**

| AFQT category | Newly unqualified | FY 1989 recruits | 1980 civilians 18 to 23 |
|---|---|---|---|
| I | — | 4 | 4 |
| II | — | 35 | 33 |
| IIIA | 5 | 27 | } *32 |
| IIIB | 72 | 29 | |
| IV | 24 | 6 | 24 |
| V | — | — | 7 |
| Total | 100 | 100 | 100 |

*Civilian data only available for category III as a whole.

The AFQT scores of the newly unqualified are substantially lower than those of civilian youth. None of the newly unqualified are in the top two AFQT categories, a consequence of the way this group is defined. The great majority (72 percent) are concentrated in the lower part of the "average" range (Category IIIB). About one quarter (24 percent) are in Category IV and would be considered "below average." None is in the lowest category, because there are no Category V recruits. (Category V applicants are among the "old unqualified.") In contrast to the AFQT scores of the newly unqualified, the scores of new recruits tend to be higher than those of civilians, largely because the enlistment screening process excludes most applicants in Category IV and all in Category V. Almost one-third of civilian youth fall in these bottom two categories. While there is a strong association between race and AFQT scores among all recruits, the association between these two variables for the newly unqualified is rather modest, as Table 7 shows.

**Table 7.—Distribution of AFQT scores among the newly unqualified by race**

| AFQT category | White | Black | Other |
|---|---|---|---|
| IIIA | 6 | 3 | 3 |
| IIIB | 73 | 69 | 74 |
| IV | 21 | 28 | 23 |

The proportions of white, black, and "other" individuals in each AFQT category differ, but not greatly. Their mean AFQT percentile scores (not shown in Table 7) are 35, 31, and 30, respectively. In the lower ranges of the AFQT distribution, differences by race are not as marked as they are across all scores. In effect, the tested aptitude of a white youth selected at random from this population should not be much different from that of a black youth or a member of another racial minority.

## Occupational Composites

The AFQT is only one of many test composites that are constructed from the 10 ASVAB subtests. Most of the other are occupational composites used to place recruits in military jobs. Each service has its own set: the Army has 10, the Navy 11, the Marine Corps 6, and the Air Force 4. The Air Force composites, displayed in Table 8, are the most widely used in military manpower research. The Army, Navy, and Marine Corps have similar composites, in addition to others.

**Table 8.—Common aptitude composites and their component ASVAB subtests**

| | |
|---|---|
| Mechanical | Mechanical Comprehension<br>Auto and Shop Information<br>General Science |
| Administrative | Coding Speed<br>Numerical Operations<br>Work Knowledge<br>Paragraph Comprehension |
| General | Work Knowledge<br>Paragraph Comprehension<br>Arithmetic Reasoning |
| Electronics | Arithmetic Reasoning<br>Mathematics Knowledge<br>Electronics Information<br>General Science |

By examining the composite scores of the newly unqualified, we can learn more about the occupation-related abilities these youths will bring to the labor market. Table 9 shows the mean percentile scores of the newly unqualified, broken out by sex.

**Table 9.—Aptitude composites: Mean percentile scores of the newly unqualified and 1980 civilians aged 18 to 23 by sex**

| | Newly unqualified | | | 1980 civilians 18 to 23 | | |
|---|---|---|---|---|---|---|
| **Composites** | **Males** | **Females** | **All** | **Males** | **Females** | **All** |
| Mechanical | 49 | 25 | 47 | 51 | 26 | 39 |
| Administrative | 38 | 51 | 39 | 44 | 51 | 47 |
| General | 34 | 33 | 34 | 48 | 48 | 50 |
| Electronics | 37 | 29 | 36 | 53 | 41 | 47 |

Altogether, the newly unqualified have lower mean scores than civilian youth on the administrative, general, and electronics composites, but a higher mean score on the mechanical composite. However, these comparisons are strongly influenced by the gender composition of each group, because gender is related to test scores. Males tend to have higher mechanical scores than females, for example. The newly unqualified, as a group, score better than civilian youth on the mechanical composite, because most of the unqualified are male. Controlling for gender, however, the newly unqualified males are still competitive with civilian males in the market for mechanical occupations, in which males predominate. Their mean percentile scores, 49 and 51, are roughly similar.

In the market for administrative jobs, which include many secretarial and clerical occupations, the newly unqualified women are competitive with civilian females and with all civilians. In most other comparisons of males with males, females with females, and all unqualified youth with all civilians, those newly unqualified for service exhibit substantial aptitude deficits.

Table 10 shows the mean composite scores by race of the newly unqualified. Since the market for jobs requiring these aptitudes tends to be non-racial, the racial subgroups of the newly unqualified are compared with all civilian youth.

**Table 10. — Aptitude composites: Mean percentile scores of the newly unqualified and 1980 civilians aged 18 to 23 by race of newly unqualified**

| | Newly unqualified | | | |
|---|---|---|---|---|
| **Composites** | **White** | **Black** | **Other** | **1980 civilians 18 to 23** |
| Mechanical | 51 | 30 | 32 | 39 |
| Administrative | 40 | 36 | 38 | 47 |
| General | 35 | 29 | 29 | 50 |
| Electronics | 37 | 30 | 32 | 47 |

Among the newly unqualified, only one racial group is competitive with civilian youth, on average, and then only in one aptitude area. The militarily unqualified whites have substantial strength in mechanical aptitude. Their mean percentile score for this composite is 51, as compared with 39 for civilian youth. As we have seen, gender composition accounts for much of this difference, but even controlling for gender, whites among the newly unqualified would be competitive in mechanical occupations. Otherwise, the scores of the militarily unqualified whites are markedly below those of the youth population, and the scores of blacks and other minority members are lower still.

# Education

Newly unqualified youth, like recruits in general, are almost all high school graduates (see Table 11). Compared with the civilian youth population, they include very few high school dropouts and very few individuals with any college experience.

**Table 11.—Education of selected military and civilian population**

| Education | Newly qualified | FY 1989 recruits | Civilians 18 to 24 |
|---|---|---|---|
| Less than HS grad. | 3 | 3 | 18 |
| HS grad. | 96 | 95 | 43 |
| Education beyond HS | 1 | 2 | 38 |
| Total | 100 | 100 | 100 |

High school graduation status is important in military manpower planning because research has repeatedly shown that first-term attrition rates are lower for high school graduates than for nongraduates. High school graduation seems to be associated with personal qualities such as perseverance and commitment to a course of action. Needless to say, such qualities are valuable in the civilian labor market, as well as in military service. To some extent, they offset the deficit in the tested aptitude of newly unqualified youth, tending to increase their competitiveness in the labor market.

# Region

Among the four Census regions, the South will experience the greatest impact from reductions in the number of military recruits (see Table 12). Forty-six percent of the unqualified youth come from the South, as compared to 40 percent of FY 1989 recruits and 34 percent of the civilian youth population. The Northeast will be least affected, in relative terms; it has 21 percent of the youth unqualified for service. The North Central region will be affected in proportion to its numbers, while the West will have a somewhat smaller share of the newly unqualified than it does of all 18- to 24-year-olds.

**Table 12.—Region of selected military and civilian populations**

| Region | Newly unqualified | FY 1989 recruits | Civilians 18 to 24 |
|---|---|---|---|
| Northeast | 13 | 14 | 21 |
| North Central | 25 | 26 | 25 |
| South | 46 | 40 | 34 |
| West | 17 | 20 | 21 |
| Total | 100 | 100 | 100 |

Table 13 shows the racial distribution of the newly unqualified in each region. The South has the largest share of newly unqualified youth who are black, as well as the largest proportion overall. Fifty-seven percent of the militarily unqualified in the South will be black according to this scenario. In fact, the more than 80,000 black youth in the South who will be unable to enter the military because of new, higher quality standards will make up the single largest racial/regional bloc of the newly unqualified. The next largest group is southern whites.

**Table 13.—Percentage of newly unqualified by race within region (with numbers projected for FY 1991 through FY 1995)**

| Race | Northeast | North Central | South | West |
|---|---|---|---|---|
| White | 58<br>(22,828) | 62<br>(46,824) | 40<br>(56,542) | 60<br>(31,564) |
| Black | 33<br>(13,034) | 35<br>(26,442) | 57<br>(80,432) | 16<br>(8,514) |
| Other | 9<br>(3,581) | 3<br>(2,622) | 3<br>(4,260) | 24<br>(12,891) |
| Total | 100<br>(39,442) | 100<br>(75,888) | 100<br>(141,233) | 100<br>(52,969) |

Combining blacks, members of other racial minorities, and Hispanics, we find that almost two-thirds (64 percent) of the newly unqualified in the South—a total of around 91,000 individuals—are of racial-ethnic minority background. The corresponding figures are 44 percent in the Northeast, 39 percent in the North Central region, and 48 percent in the West.

The concentration of minority group members in the South does not imply that the AFQT scores of the unqualified in the South are substantially different from the scores of those in other regions. In fact, they are rather similar (see Table 14)

**Table 14.—AFQT distribution of newly unqualified within region (percent)**

| Category | Northeast | North Central | South | West |
|---|---|---|---|---|
| IIIA | 6 | 5 | 4 | 5 |
| IIIB | 71 | 70 | 72 | 73 |
| IV | 23 | 25 | 24 | 23 |
| Total | 100 | 100 | 100 | 100 |

As noted earlier, the association between race and AFQT scores among the unqualified is relatively weak; hence it is not surprising that there is little regional variation in the distribution of AFQT scores, even though there is substantial regional variation by race. Nor are there regional differences in education; approximately 96 percent of the unqualified in all regions are high school graduates. There are some interesting differences in the occupation-related composite scores of the newly unqualified in each region, however, as Table 15 shows.[4]

**Table 15.—Aptitude composites: Mean percentile scores of the newly unqualified and 1980 civilians aged 18 to 23 by region of newly unqualified**

| | Newly unqualified | | | | |
|---|---|---|---|---|---|
| Composite | Northeast | North Central | South | West | Civilians 18 to 23 |
| Mechanical | 48 | 45 | 43 | 49 | 39 |
| Administrative | 39 | 33 | 43 | 44 | 47 |
| General | 34 | 30 | 35 | 37 | 50 |
| Electronics | 36 | 35 | 38 | 37 | 47 |

The mean mechanical scores of the newly unqualified in all regions are higher than the mean score of civilian youth nationwide. Except in the South, they are also roughly on a par with all civilian males, who have a mean percentile score of 51.

Newly unqualified youths in the South and West also have mean administrative scores (43,44) that are fairly close to the national average (47), suggesting that they could be reasonably competitive for secretarial and clerical jobs nationwide. In most other composites and regions, however, the newly unqualified appear to be at a marked disadvantage in terms of occupation-related aptitudes.

## Socioeconomic Backgrounds of the Newly Unqualified

We can learn something about the social class background of the newly unqualified by examining data from DoD's continuing Survey of Recruit Socioeconomic Backgrounds. Administered to samples of new recruits as they enter basic training, the survey asks for current socioeconomic information about their parents (step-parents, guardians) in the households where they lived last before entering the military. The data reported here were collected from 10,376 recruits during the last two quarters of FY 1989. To simulate the newly unqualified, the appropriate percentage of survey respondents with the lowest AFQT scores in each service were once again selected for analysis.[5]

Information on the parents of newly unqualified youth is compared with data on the parents of all recruits sampled in FY 1989 and with data from the Current Population Survey (CPS). Comparison groups were constructed from the CPS data files, comprising male and female parents of children between the ages of 14 and 21, inclusive, who are living at home.

Tables comparing the parents of the newly unqualified, of FY 1989 recruits, and of youth aged 14 to 21 in the general population are found in Appendix A. The following discussion summarizes the data in those tables.

### Marital Status

Most of the parents of newly unqualified youth are married (see Table A-1). This is true of 87 percent of their fathers and 68 percent of their mothers. However, both the fathers and mothers of unqualified youth are less likely than their counterparts in the Current Population Survey to be married. Among these parents in the general population, 94 percent of the fathers and 79 percent of the mothers are married. In effect, the fathers of unqualified youth are .93 times as likely to be married as the comparison fathers (87 percent divided by 94 percent) and the mothers of the unqualified are .86 times as likely to be married as their counterparts in the general population (68 percent divided by 79 percent).

### Home Ownership

A substantial majority of the parents of the newly unqualified also own the homes they live in (see Table A-2). Altogether, 73 percent of the fathers and 64 percent of the mothers are either sole or joint owners of their homes. These proportions are 6 to 8 percentage points lower than the proportions of all recruit parents who are homeowners, and 11 points lower than the proportion of CPS parents who own their homes. The fathers of the newly unqualified are .87 times as likely as their civilian counterparts to own their own homes and the mothers of the unqualified youth are .85 times as likely to do so.

### Education

The education deficit of fathers of newly unqualified youth is considerable (Table A-3). Almost one-third of the fathers of the newly unqualified did not finish high school, as compared to less than one-fifth of CPS fathers. Roughly equal proportions of each group have high school graduation or some college

attendance as their highest education level. However, fathers of the newly unqualified are only about half as likely as CPS fathers to be college graduates (12 percent, 26 percent). The same pattern is evident among the mothers, although the differences among the groups are not as large.

## Employment Status

The great majority of the fathers and mothers in the labor market are employed (Table A-14). The unemployment rate for the fathers of the newly unqualified is 2.6 percent, while that of the CPS fathers is 2.3 percent. However, mothers of unqualified youth are more than twice as likely as the comparison mothers to be unemployed (8.5 percent vs. 3.9 percent).

## Occupation

Open-ended descriptions of their parents' primary occupation provided by respondents in Census format were used to determine parental occupation. The descriptions were manually coded to 3-digit Census occupation codes, which were then collapsed into 13 major Census categories.

Fathers of the newly unqualified are only half as likely to have professional or managerial occupations as are fathers in the CPS comparison group—15 percent as compared to 31 percent (see Table A-5). They are also about half as likely to be found in sales occupations. On the other hand, they are substantially more likely to have working-class occupations such as those in precision production, machine operation, and transportation. Altogether, 52 percent of the fathers of the unqualified are in these three categories, as compared to 38 percent of fathers in the general population.

The mothers' occupations also show a downward shift, although it is not as marked as that of the fathers. They are somewhat less likely than the comparison group to work as managers or professionals and much more likely to work in the service sector or as machine operators.

## Socioeconomic Index Scores

Socioeconomic Index scores have been assigned to records in the DoD and CPS data sets, based on the occupations of the recruits' parents and the CPS adults. The scores are a function of the income, education, and prestige associated with each occupation. Stevens and Cho[6] developed such scores for each 3-digit occupation code in the 1980 Census, revising earlier work by Duncan, Hauser, Featherman, and others. Two sets of scores were developed—one for the total labor force and one for the male labor force, called the Total Socioeconomic Index (TSEI) and the Male Socioeconomic Index (MSEI), respectively. TSEI scores are the best socioeconomic measures of women's occupations currently available; they range from 11.80 to 88.65. MSEI scores, ranging from 13.98 to 90.45, measure the status of men's occupations.

The mean socioeconomic index score of the fathers of newly unqualified youth is 32.2, while that of CPS fathers is 40.1 (see Table A-6). Occupations with index scores around 32.0 include hardware sales worker (32.1), communications equipment operator (31.5), dispatcher (32.1), and firefighter supervisor (33.0). Most working class occupations have lower scores, generally ranging from about 15 to 25. Occupations with status similar to those of CPS fathers (40.1) include information clerk (40.2), teachers' aide (40.8), computer equipment supervisor (40.7), and fire inspector (40.0). The mean socioeconomic status score of the mothers of unqualified youth is 30.8 and that of CPS mothers is 36.1. In terms of status, the mothers of unqualified youth are closer to their CPS counterparts than the fathers.

## Conclusions

More than 300,000 youths who might otherwise have joined the military in the next 5 years are likely to become unqualified if current plans for the drawdown are implemented. Most will come from stable working class and lower-middle-class backgrounds, and almost half will be members of racial or ethnic minorities. The South will feel the greatest impact of the cutbacks: close to half of the newly unqualified will come from that region, and within the South almost two-thirds of the unqualified will be members of racial or ethnic minorities.

These young people are not as bright as civilian youth in general, if aptitude as measured by the AFQT is any indication. Most are in the lower-middle ranges of tested aptitude. None is at the bottom of the scale, because such youth have been excluded from the military for years. However, what the newly unqualified lack in aptitude may be compensated for, at least partially, by their status as high school graduates. For the most part, high school graduation is required for enlistment because graduates are much more likely than nongraduates to complete their first term of service. The same persistence which enables them to graduate from high school, despite some aptitude limitations, also carries them through their term of service. It is also likely to be an important asset in the labor market and in job performance.

The youth who will become unqualified for service also have some deficits in broadly defined occupational skills, as measured by ASVAB composites. In overall terms, they score less well than civilian youth in administrative, general, and electronic aptitude. Males unqualified for service have about the same mechanical scores as civilian males, and females unqualified for service have about the same administrative scores as civilian females. Therefore, on average, the young men would be competitive for mechanical jobs such as those in precision production and machine operation. They would also, of course, be more competitive for jobs requiring lower skill levels, such as those in the "handlers, helpers, and laborers" category. The young women, on average, are likely to be competitive for secretarial jobs, as well as for those requiring lesser skills.

The relatively small number of women who will become unqualified for service seem to be in a better labor market position than the men. The demand for skilled office workers is increasing, while that for "smokestack industry" skills is decreasing as the nation moves into the postindustrial age. The number of old-style machine operators continues to decline as computerized robots replace them. Even auto repair increasingly requires electronic and computer skills as well as mechanical ones.

It is unclear to what extent mathematics and electronics training would help the newly unqualified as they enter the labor market. Such skills are clearly in demand, but the gains from training in these areas will be limited to some extent by the aptitude deficits of the youths. If the federal and state governments decide to replace the training these young men and women would have received in the military, they should develop strategies for optimizing their training investments. Further research on military data bases would be useful in this process. Employing methods similar to those described in this paper, it would be possible to determine what kinds of training governments could usefully provide. Because the distribution of occupations in the military is different from that in the civilian economy (there are few manufacturing jobs, for example), the results of such analysis would have to be interpreted carefully, but the process could provide information on the kinds of training that would benefit the newly unqualified.

# Notes

[1] For a full description of this survey, see U.S. Department of Defense, Office of the Assistant Secretary of Defense (Force Management and Personnel), *Population Representation in the Military Services, Fiscal Year 1989* (Washington D.C.: 1990), Chapter 30.

[2] Since Hispanics may be of any race, the total racial-ethnic proportion is not the sum of the 49 percent racial minorities and the 9 percent Hispanics. For example, some of the Hispanics in Table 4 are counted as blacks in Table 3.

[3] See U.S. Department of Defense, Office of the Assistant Secretary of Defense (Manpower, Reserve Affairs, and Logistics), *Profile of American Youth: 1980 Nationwide Administration of the Armed Forces Vocational Aptitude Battery* (Washington, D.C.: March 1982).

[4] Comparisons are with all civilian youth, rather than with civilian youth in each region, because regional breakdowns of civilian occupational composites are not available in the *Profile of American Youth.*

[5] Estimates made from sample data are subject to sampling errors. When comparing two estimates from sample data, tests can be conducted to determi how likely it is that the differences observed in the estimates reflect real differences in the population. The tests used for inter-service differences in this chapter are indicated at the bottom of the tables. For the DoD/CPS comparisons, the CPS estimate, which is based on very large sample numbers, is regarded as a census count, and the difference is regarded as statistically significant at the $p.<.05$ level if the DoD estimate differs from it by at least two standard deviations.

[6] G. Stevens and J.H. Cho, "Socioeconomic Indices and the New 1980 Census Occupational Classification Scheme," *Social Science Research,* Vol. 14 (1985): 142–168.

# Appendix

**Table A-1.—Percent of parents who are married by gender of parents**

| | Parents of newly unqualified | Parents of FY 1989 recruits | CPS parents |
|---|---|---|---|
| Males | 87 | 89 | 94 |
| Females | 68 | 73 | 79 |

**Table A-2.—Percent of parents in "owned" residences by gender of parents**

| | Parents of newly unqualified | Parents of FY 1989 recruits | CPS parents |
|---|---|---|---|
| Males | 73 | 79 | 84 |
| Females | 64 | 72 | 75 |

**Table A-3.—Percent of male parents at each education level**

| Education | Fathers of newly unqualified | Fathers of FY 1989 recruits | CPS fathers |
|---|---|---|---|
| Less than HS grad. | 31 | 23 | 19 |
| HS grad. | 37 | 35 | 36 |
| Some college (no 4-year degree) | 20 | 23 | 18 |
| College grad. | 12 | 19 | 26 |
| Total | 100 | 100 | 100 |

**Table A-4.—Percent of parents unemployed by gender of parents**

| | Parents of newly unqualified | Parents of FY 1989 recruits | CPS parents |
|---|---|---|---|
| Males | 2.6 | 2.0 | 2.3 |
| Females | 8.5 | 6.4 | 3.9 |



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**Table A-5.—Percent of parents in each occupational category**

| | Male Parents | | | Female Parents | | |
|---|---|---|---|---|---|---|
| **OCCUPATION** | **Unqual** | **Recrts** | **CPS** | **Unqual** | **Recrts** | **CPS** |
| Executive, Administrative Managerial | 10 | 12 | 18 | 6 | 8 | 11 |
| Professional | 5 | 8 | 13 | 10 | 13 | 15 |
| Technical | 2 | 3 | 2 | 3 | 3 | 3 |
| Sales, | 6 | 8 | 11 | 9 | 11 | 10 |
| Clerical, Administrative Support | 5 | 5 | 4 | 25 | 29 | |
| Protective Services | 4 | 4 | 3 | 1 | 1 | 1 |
| Other Services | 6 | 4 | 4 | 27 | 21 | 16 |
| Farming, Forestry, Fishing | 4 | 3 | 4 | 1 | 1 | 1 |
| Precision Production | 27 | 26 | 22 | 3 | 3 | 3 |
| Machine Operators | 12 | 9 | 8 | 12 | 8 | 8 |
| Transportation | 13 | 10 | 8 | 1 | 1 | 1 |
| Handlers, Helpers, Laborers | 4 | 3 | 4 | 2 | 2 | 2 |
| Military | 4 | 3 | 0 | 0.5 | 0.2 | 0 |

**Table A-6.—Mean socioeconomic index scores of parents by sex of parent**

| | Parents of newly unqualified | Parents of FY 1989 recruits | CPS Parents |
|---|---|---|---|
| Males | 32.2 | 36.0 | 40.1 |
| Females | 30.8 | 33.4 | 36.1 |



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# Crew Cuts: Effects of the Defense Drawdown on Minorities

Janice H. Laurence

Time was when the term "crewcut" was associated with military entry. A young man arrived at boot camp and took on a military identity by having his head shaved down to stubble. These days "crew cut" brings to mind quite the opposite impression, given the prominence of the rumor and speculation surrounding the defense drawdown.

The United States watched the past year's dramatic developments in Eastern Europe with great anticipation and jubilation. In response to the thawing of Cold War tensions and perceptions of greatly reduced threats to our nation and its vital interests, there are plans to curtail the defense budget. One means of achieving this goal is cutting end-strengths or reducing the size of the military forces. While this may be good news in the realm of foreign affairs, many are wondering about the domestic implications of the drawdown. In particular, what will Defense downsizing mean for minorities in the military? What happens to *them* when Uncle Sam doesn't want them anymore?

## The Defense Reducing Plan

Before looking specifically at the issues of minorities and the military, it may be useful to get a sense of the force reduction plans being considered. According to the Director for Accession Policy within the Office of the Assistant Secretary of Defense (Force Management and Personnel):

> . . . no one knows for sure what the size of the military is likely to be in five years. In fact . . . the size of the military next year is still in doubt. Despite the uncertainty of specifics, the one thing we know for sure is that end-strengths will be coming down rapidly.[1]

Like all reducing plans, the military drawdown is subject to deviation. Operation Desert Shield may change the course or the pace of the drawdown, but events in the Middle East are not expected to forestall the cutbacks in defense permanently. In fact, some would contend that a leaner, meaner (and perhaps, more qualified) force can more than adequately thwart Third World hostilities.[2] A reduced and reconfigured force may be just what the general ordered. A recent editorial in the Outlook section of *The Washington Post* proclaimed "the United States already possesses more than adequate troops and equipment to cope with the Iraqi situation."[3] This is thought to be especially true because the need for heavy military commitments to counter the Warsaw Pact and the Soviet threat has been removed. Whether or not military experts would agree with this simplistic manpower and resource assessment, the legislative and executive branches of the government remain committed to the force drawdown.

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Note: The author is senior staff scientist with the Human Resource Research Organization. The views and opinions expressed in this paper are those of the author and do not represent the official views of the Department of Defense, the Department of Education, or the Human Resources Research Organization unless otherwise documented.

Expectations are that overall active duty force levels will be cut by about 25 percent from just over 2 million to about 1.5 million. And the largest service, the Army, is scheduled to suffer the most, with a 30 percent cut from over 700,000 members to about 500,000. For Fiscal Year 1991, the Senate wants the numbers down by 100,000, while the House would like to wield the ax even more severely and cut 129,500 members of the active duty forces.[4/5]

The number the Armed Forces must let go is only part of the story. The Department of Defense (DoD) must also determine *how* it will make these force reductions without unnecessarily hurting the balance of the force, not to mention the lives, careers, and morale of the officers and enlisted personnel who voluntarily serve as members of the military services. The most noticeable impacts will be within the enlisted ranks, since they comprise over 80 percent of active duty military personnel. There are over six times as many enlisted personnel as officers. Except for the past few years, the number of yearly incoming enlistees exceeded the total number of active duty officers.

In streamlining the enlisted ranks, the services will be compelled to cut recruiting, limit first-term reenlistments, forcibly retire those with 20 or more years in service, and even "lay off" some career personnel at a point between their first term and retirement. The precise blend of approaches will depend on whether the Senate or the House reduction plan is adopted (or something in between or above either).

Numerical accession requirements started to decline even before the Eastern European turnaround really got rolling, as shown in Table 1. FY 1989 accessions were only 90 percent of FY 1981 requirements. The programmed number for FY 1990 is down to about 73 percent of 1981 levels and 20 percent leaner than the already smaller 1989 numbers. In fact, the figure for 1990 is down from the OBE (overcome by events) 252,000 programmed in January of 1990. How low will DoD go? Again, nobody knows or nobody's telling for sure, but the cuts are expected to adversely affect minorities.

**Table 1.—Non-prior service accessions to the active duty forces for Fiscal Years 1981-91**

| Fiscal year | Accessions (in thousands) |
|---|---|
| 1981 | 304 |
| 1982 | 305 |
| 1983 | 303 |
| 1984 | 304 |
| 1985 | 301 |
| 1986 | 313 |
| 1987 | 296 |
| 1988 | 273 |
| 1989 | 278 |
| 1990 | 222* |
| 1991 | 200 |

Source: FY 1981 through 1989 from Department of Defense, *Population Representation in the Military Services* (Washington, DC: Office of the Assistant Secretary of Defense [Force Management and Personnel], 1990, 1989, 1988, 1987, 1986).

*According to the Office of the Assistant Secretary of Defense (Force Management and Personnel) this is the programmed recruiting objective for FY 1990 and thus subject to quite a change. Through June of 1990, just three months before the end of the fiscal year, the number of accessions totaled 145,669.

## Opportunities Here Today

According to Richard Halloran of *The New York Times*, "many blacks say they have found the Services perhaps the best equal opportunity employers in America."[6] Military service is an appealing avenue for racial-ethnic minorities, particularly blacks, as evidenced by relatively high enlistment rates and participation among these minority groups. African Americans have pursued military entry (with varying degrees of success) since the days of the Revolution. Their numbers and proportions among the rank and file since that time have ebbed and flowed depending primarily on manpower needs. However, the inception of the All-Volunteer Force (AVF) in 1973 generally demarcates a period of sustained growth in minority representation in the military, as Table 2 attests.

**Table 2.—Blacks[1] as a percentage of total first-time accessions by service and total military, Fiscal Years 1973-90**

| Fiscal year | Service | | | | Total DoD |
|---|---|---|---|---|---|
| | Army | Navy | Marine Corps | Air Force | |
| 1973 | 19.5 | 10.8 | 21.4 | 14.5 | 16.9 |
| 1974 | 27.2 | 10.5 | 21.2 | 16.6 | 20.6 |
| 1975 | 22.9 | 10.1 | 19.4 | 13.4 | 17.6 |
| 1976 | 24.4 | 8.7 | 15.9 | 9.9 | 16.9 |
| 1977 | 29.4 | 10.8 | 20.5 | 11.1 | 20.0 |
| 1978 | 34.3 | 12.6 | 23.8 | 13.6 | 22.9 |
| 1979 | 36.8 | 15.6 | 27.5 | 16.5 | 26.0 |
| 1980 | 29.9 | 13.4 | 23.3 | 15.0 | 22.1 |
| 1981 | 27.3 | 12.5 | 17.7 | 14.1 | 18.9 |
| 1982 | 24.6 | 13.4 | 17.5 | 15.5 | 18.8 |
| 1983 | 22.0 | 14.1 | 17.1 | 14.2 | 17.9 |
| 1984 | 22.6 | 14.8 | 17.5 | 13.6 | 18.3 |
| 1985 | 22.5 | 15.4 | 18.5 | 15.5 | 18.6 |
| 1986 | 22.4 | 17.3 | 17.1 | 16.1 | 19.1 |
| 1987 | 23.4 | 19.0 | 18.0 | 13.9 | 19.7 |
| 1988 | 25.1 | 20.1 | 18.3 | 13.1 | 20.7 |
| 1989 | 26.4 | 21.6 | 17.9 | 12.7 | 21.7 |
| 1990[2] | 25.8 | 20.4 | 17.4 | 12.9 | 20.5 |

Source: Adapted from Department of Defense, *Population Representation in the Military Services*. (Washington, DC: Office of the Assistant Secretary of Defense [Force Management and Personnel], 1990, 1989, 1988).

[1]Blacks include Black Hispanics.

[2]The source for the 1990 percentages is the Office of the Assistant Secretary of Defense. These numbers are through June 1990.

Compared to the percentage of blacks among the youth population, which is just shy of 15 percent, this minority group is clearly overrepresented among those who choose to enter the military. Black representation is particularly high in the Army. With the exception of a slight downturn following the period from 1976 to 1980,[7] the black accession percentage has risen. In 1989, the military services took in about 1.7 percent or just over 60,000 members of the population of 18- through 24-year-old blacks (totaling 3.5 million), while just under 1 percent or almost 202,000 of the 21 million whites of comparable ages entered the enlisted ranks. Among male youth specifically, the percentage of whites was 1.7

percent (or 177,000), while almost 3 percent (or 49,000) of young black men came into the military that fiscal year.[8]

Blacks are not the only minority group in the military, but they are by far the largest, accounting for about three-quarters of all minority accessions. Also, because detailed tracking of other groups is harder to come by, blacks are the most analyzed of the racial-ethnic minorities. Hispanics—Mexicans, Puerto Ricans, Cubans, Latin Americans, and so on—are a growing ethnic minority in this country. Although as a group their representation in the armed forces also seems to be growing, it had not as of 1989 reached the 11 percent Hispanics constitute of the 18- to 24-year-old youth population. For example, Table 3 shows the Hispanic percentage of first-time enlisted accessions for the past 4 years. Overall, among the 1989 accessions, Hispanics comprised 6 percent. However, this degree of "underrepresentation" of Hispanics may be overestimated since general population figures try to account for illegal aliens, who are not eligible to enlist in the military.

**Table 3.—Hispanics* as a percentage of total first-time accessions by service and total military, Fiscal Years 1986-89**

| | Service | | | | |
|---|---|---|---|---|---|
| Fiscal year | Army | Navy | Marine Corps | Air Force | Total DoD |
| 1986 | 4 | 6 | 5 | 2 | 4 |
| 1987 | 4 | 7 | 6 | 3 | 5 |
| 1988 | 5 | 7 | 7 | 3 | 5 |
| 1989 | 6 | 8 | 7 | 3 | 6 |

Source: Adapted from U.S. Department of Defense, Office of the Assistant Secretary of Defense (Force Management and Personnel), *Population Representation in the Military Services* (Washington, DC: 1990, 1989, 1988, 1987, 1986).

*Hispanics do not include Blacks.

Another interesting enlistment phenomenon among minorities is that, compared to male recruits, female minority accessions are even higher in proportion to the general population than are male minority accessions. For example, while 20 percent of FY 1989 male recruits were black, 30 percent of FY 1989 female recruits were black. The services are recruiting more than 5 percent of the over 11 million black women aged 18 through 24 in contrast to less than .25 percent of the almost 25 million white women.[9] Who knows how big the draw would be if women were not restricted by law and service policy.

Not only are blacks more likely than whites to enter service but, due to contributing factors such as higher levels of education[10] and reenlistment rates among blacks in the military, they comprise an even higher proportion of the total enlisted force. In 1973, only 14 percent of all active duty enlisted personnel were black, while today over 20 percent can be so categorized. Table 4 shows the latest available distribution of active duty enlisted personnel by race-ethnicity for each service. The most staggering figure (but consistent over the past decade) in this table is the almost one-third of Army enlisted personnel who are black.[11] Although thre is no breakdown in the table, black women are more likely to reenlist and thus, compared to accession levels, they comprise a higher proportion of the active duty enlisted force. For example, as of September 30, 1989, blacks comprised 23 percent of all enlisted personnel. Among male and female enlistees respectively, the percentages of corresponding blacks were 22 and 34 percent.

**Table 4.—Number and percentage of active duty enlisted personnel by race-ethnicity within service (as of June 30, 1990)**

| Race-Ethnicity | Service | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Army | | Navy | | Marine Corps | | Air Force | | Total DoD | |
| | N | % | N | % | N | % | N | % | N | % |
| White | 372,057 | 59.2 | 355,144 | 71.1 | 121,325 | 69.0 | 326,027 | 75.2 | 1,174,553 | 67.6 |
| Black | 200,310 | 31.9 | 86,814 | 17.4 | 36,404 | 20.7 | 76,385 | 17.6 | 399,913 | 23.0 |
| Hispanic | 27,215 | 4.3 | 29,418 | 5.9 | 12,611 | 7.2 | 16,575 | 3.8 | 85,819 | 4.9 |
| Other/unk.* | 29,128 | 4.6 | 28,056 | 5.6 | 5,507 | 3.1 | 14,517 | 3.3 | 77,208 | 4.4 |
| Total | 628,710 | 100 | 499,432 | 100 | 175,847 | 100 | 433,504 | 100 | 1,737,493 | 100 |

Source: Defense Manpower Data Center, Arlington, VA.

*Other includes such categories as American Indians, Alaskan natives, Asians and Pacific Islanders.

Despite the controversy[12] it engenders, minority overrepresentation in the military has been a fact of life in the volunteer force. No doubt, the lack of civilian alternatives and opportunities have been in part responsible for the minority attraction to the military. This nation's largest educator, trainer, and employer has opened doors that had been so rudely slammed shut before. President Truman's Executive Order 9981, issued in 1948, put the military ahead of the civilian world in terms of equal opportunity and race relations. By 1954, the last of the Army's all-black units was gone.[13] Once in the military, minority members still had to face assignment, evaluation, promotion, and disciplinary hurdles, but all in all, with the passage of time, the picture in the platoon has become progressively positive. Or as noted military sociologist Charles Moskos said in the popular press:

> The armed services still have race problems, but these are minimal compared to the problems that exist in other institutions, public and private.[14]

There are certainly burdens involved in being a soldier, sailor, marine, or airman, including hazardous duty, the possibility of rapid deployment, and a somewhat nomadic life. But for black youth in particular, who face more than their fair share of high unemployment, underemployment, and impoverished, high-risk environments, the burdens may appear relatively small. As Lawrence J. Korb, former Assistant Secretary of Defense (Manpower, Reserve Affairs, and Logistics) put it:

> . . . until civilian society gives blacks the types of opportunities available in the military, blacks will continue to enlist and reenlist in large numbers.[15]

What are the opportunities afforded by the military? Aside from instilling a sense of pride, determination, and accomplishment, some of the tangible benefits include equal pay for equal rank, steady income in the form of annual basic pay plus incentives and special pay, nontaxable food and housing allowances (or base housing), health benefits, 30 days' vacation, commissary and exchange privileges, legal assistance, recreation activities, and retirement and veterans benefits.[16]

Aside from these impressive remuneration packages, the nation's largest education and training institution offers just that—large-scale education and training opportunities. The military plays a major role not just in employing youths but in furthering their education as well. When a young person enters service, he or she participates in basic training. In 6 to 8 weeks, the raw recruit is indoctrinated into the military lifestyle through physical conditioning and acquisition of general military skills. Next is skill training for 2 to 4 months on average (longer for more technical specialties) in support of the multitude

of military occupations, skilled and unskilled, technical and nontechnical. Military occupational preparation is continued through on-the-job training and, for some specialties, through advanced skill training. Military training is unique in that the responsibility for success rests mainly with the trainer rather than the trainee. Further, training is not based on the mere *hope* of a job, since once enlisted, everyone is guaranteed a position.

In addition to providing training to support military-specific functions, the services provide for and encourage participation in other educational pursuits. Most people are familiar with post-service educational benefits. Today's version of the GI Bill is not as generous as the post-World War II version, but it promotes college and vocational school participation nonetheless. The Montgomery GI Bill is a voluntary program which, in exchange for 3 years of service and the service member's contribution of $1,200 dollars, provides up to $10,800 to finance education.[17] A 1988 report released by the American Council on Education footnoted the fact that black participation in the GI Bill was quite respectable. In fact, according to the Army Education Office, while blacks comprised 22 percent of recruits, 27 percent of blacks were enrolled in the New GI Bill program.[18] Further, there are ample opportunities to pursue education while in the service, during off-duty time. Tuition assistance is provided for study at accredited institutions. And under the auspices of the Defense Activity for Non-Traditional Education Support (DANTES), not only is such study made flexible but every effort is made to evaluate a member's previous educational pursuits as well as in-service training and experience for formal educational credit. According to a Department of Defense study published in 1988, black participation in the Army and Air Force Tuition Assistance Programs was higher than that for whites. While the figures are thought to be underestimates, the trends were reported as follows. Approximately 11 percent of blacks in the Army had used tuition assistance while only 9 percent of whites had done so. The comparable figures for the Air Force were 26 and 24 percent, respectively. Another way of looking at the participation in off-duty, military-supported education is that at the time of the study, blacks accounted for 26 percent of the Army and 30 percent of Army participants in tuition assistance. On the other hand, while whites accounted for 69 percent of the Army, they claimed only 64 percent of the tuition assistance.[19] While recent data indicate that only 3 percent of recruits enter with some college experience,[20] many military personnel are working towards their education while in service and planning to do so afterwards. And the evidence has been particularly encouraging for minorities. A report prepared for the House and Senate Committees on Armed Services concluded:

> Although there is no way to quantify the number of Service members who have improved their basic skills while in the military, or the number of young people who entered the service as high school dropouts and emerged with equivalency diplomas or more, the figure must be exceedingly large.[21]

Table 5 shows the number and percentage of enlisted personnel at various levels of educational attainment by race-ethnicity. Over 90 percent of the rank and file have at least a traditional diploma. And if one counts alternative credentials, about 98 percent have a high school education or better. Though these numbers are heavily influenced by enlistment policy (i.e., the military's preference for enlisting high school diploma graduates), until 1981 the percentage of recruits coming in with a regular diploma did not exceed 80 percent.[22] Each of the racial-ethnic groups is quite similar in this regard. The percentages with at least a regular diploma ranges from a low of 91 percent for Hispanics to a high of 95 percent for *blacks*. By adding alternative credentials to this percentage, practically everyone has a secondary school education. There's more good news. Compared to the percentage of recruits entering with some college experience (e.g., 3 and 2 percent of white and black accessions, respectively, in FY 1989),[23] the percentage among the enlisted corps is at least double. Outside the military, blacks are underrepresented in higher education and since the purchasing power of federal student aid has declined, undertaking a college education without help from the military may be beyond many.[24]

**Table 5.—Number and percentage of active duty enlisted personnel by education level within race-ethnicity groups (as of March 31, 1990)**

| Education level | Race-ethnicity | | | | | | | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|
| | White | | Black | | Hispanic | | Other[1] | | | |
| | N | % | N | % | N | % | N | % | N | % |
| No credential | 26,856 | 2.2 | 4,447 | 1.1 | 2,645 | 3.0 | 949 | 1.2 | 34,897 | 2.0 |
| GED/alternative card | 72,016 | 5.9 | 17,063 | 4.2 | 6,227 | 7.2 | 3,530 | 4.5 | 98,836 | 5.5 |
| High school diploma | 1,039,810 | 85.6 | 362,225 | 89.2 | 72,399 | 83.3 | 64,779 | 82.4 | 1,539,213 | 86.1 |
| Some college | 46,309 | 3.8 | 13,419 | 3.3 | 3,502 | 4.0 | 3,728 | 4.7 | 66,958 | 3.7 |
| Bachelors | 25,333 | 2.1 | 8,087 | 2.0 | 1,961 | 2.3 | 5,283 | 6.7 | 40,664 | 2.3 |
| Masters | 2,298 | .2 | 495 | .1 | 106 | .1 | 159 | .2 | 3,058 | .2 |
| Ph.D. | 45 | <.1 | 15 | <.1 | 8 | <.1 | 34 | <.1 | 102 | <.1 |
| Total[2] | 1,214,904 | 100 | 406,232 | 100 | 86,948 | 100 | 78,586 | 100 | 1,786,830 | 100 |

Source: Defense Manpower Data Center, Arlington, VA.

[1]Other includes such categories as American Indians, Alaskan natives, Asians and Pacific Islanders.

[2]Total includes those with unknown education level.

The current data for minorities, and in particular blacks, in terms of occupational assignment in the military is not as positive. Table 6 presents the distribution of whites and minorities across the major DoD occupational areas. Whites are more than twice as likely as blacks to be assigned to electronic equipment repair jobs. Hispanics and other minorities are also underrepresented in this high-tech occupational area. On the other hand, blacks are almost twice as likely to serve in functional support and administration, generally rather soft-skill jobs. Again, other minorities fall in between whites and blacks. Also notable is that in service and supply jobs, the percentage for blacks is just about one and one half times that for whites.

Though blacks are still more likely than whites to serve in unskilled jobs because of a test score gap (and in some instances personal preference), there has been a conscious effort to achieve a more equitable racial balance in military specialties. Table 6 presents only a static view of job assignments for minorities. Minorities have made great strides in military occupational placement. Eitelberg recently examined the occupational assignment patterns of blacks, whites, and Hispanics over the years and concluded that:

> . . . the trends of the past decade or so—slow but perceptibly increasing opportunities for women and minorities—will continue at the present pace unless propelled by a major change in existing assignment policies or practice.[25]

A recent editorial by Andrew Moskos in *Black Issues in Higher Education* says that blacks have quite a stake in the conservative military establishment. Unfortunately, "black success in the Army seems destined to remain an exception." [26]

## Opportunities Gone Tomorrow?

Could it be that Eitelberg's major change has arrived and the younger Moskos' Army success will stop short for military minorities? What will happen to minorities when the nation's largest employer starts laying people off by the thousands? Perhaps a simulation would be informative. Table 7, showing the number and percentage of active duty personnel by race-ethnicity within years of service categories, provides the starting point. Blacks are somewhat more likely than whites to be in the second term or beyond. Hispanics, on the other hand, have less tenure than whites.

**Table 6.—Number and percentage of active duty enlisted personnel by occupational area within race-ethnicity groups (as of June 30, 1990)**

| Occupational area | Race-ethnicity: White N | White % | Black N | Black % | Hispanic N | Hispanic % | Other[1] N | Other[1] % | Total N | Total % |
|---|---|---|---|---|---|---|---|---|---|---|
| 0-Infantry, guncrews & seamanship | 199,463 | 17.0 | 70,860 | 17.7 | 16,234 | 18.9 | 11,914 | 15.4 | 298,471 | 17.2 |
| 1-Electronic equipment repair | 137,789 | 11.7 | 21,563 | 5.4 | 6,878 | 8.0 | 5,052 | 6.5 | 171,282 | 9.9 |
| 2-Communications & intelligence | 118,277 | 10.1 | 40,674 | 10.2 | 7,419 | 8.6 | 4,935 | 6.4 | 171,305 | 9.9 |
| 3-Health care | 59,565 | 5.1 | 26,662 | 6.7 | 5,857 | 6.8 | 6,339 | 8.2 | 98,423 | 5.7 |
| 4-Other technical & allied | 29,807 | 2.5 | 8,202 | 2.1 | 1,634 | 1.9 | 1,534 | 2.0 | 41,177 | 2.4 |
| 5-Functional support & administration | 149,554 | 12.7 | 93,482 | 23.4 | 14,774 | 17.2 | 15,541 | 20.1 | 273,351 | 15.7 |
| 6-Electrical/mechnanical equipment repair | 262,218 | 22.3 | 59,909 | 15.0 | 16,004 | 18.6 | 17,081 | 22.1 | 355,212 | 20.4 |
| 7-Craftsmen | 52,121 | 4.4 | 11,282 | 2.8 | 2,960 | 3.4 | 3,126 | 4.0 | 69,489 | 4.0 |
| 8-Service & supply | 94,435 | 8.0 | 47,187 | 11.8 | 6,761 | 7.9 | 8,141 | 10.5 | 156,524 | 9.0 |
| 9-Non-occupational[2] | 71,324 | 6.1 | 20,092 | 5.0 | 7,298 | 8.5 | 3,545 | 4.6 | 102,259 | 5.9 |
| Total | 1,174,553 | 100 | 399,913 | 100 | 85,819 | 100 | 77,208 | 100 | 1,737,493 | 100 |

Source: Defense Manpower Data Center, Arlington, VA.

[1]Other includes such categories as American Indians, Alaskan natives, Asians and Pacific Islanders.

[2]Includes patients, prisoners, officer candidates and students, persons serving in undesignated or special occupations, and those in basic or occupational training.

Using the Senate scenario of reducing end strength by 100,000 personnel in FY 1991, what will be the impact on minorities? Assuming that DoD would indeed reduce incoming recruits to 200,000 (compared to close to 300,000 accessions per year in recent times), forcibly retire those with 20 plus years, and cut those in the first term primarily, the distribution of the 300,000 to be cut from the current enlisted level (remember 200,000 had to be added due to accession levels) across tenure groups might look something like this:

| Years | Number cut |
|---|---|
| 1–4 | 195,000 |
| 5–8 | 80,000 |
| 9–16 | 0 |
| 17+ | 25,000 |

If the cuts are proportional to the race-ethnicity distributions within these tenure points, then the resulting FY 1991 downsizing might affect whites, blacks, Hispanics, and others as follows:

| Race-ethnicity | Number cut | Percentage decrease |
|---|---|---|
| White | 206,328 | 17.6 |
| Black | 66,253 | 16.6 |
| Hispanic | 15,211 | 17.7 |
| Other | 12,208 | 15.8 |

**Table 7.—Number and percentage of active duty enlisted personnel by years of service within race-ethnicity groups (as of June 30, 1990)**

| Years of service | Race-ethnicity | | | | | | | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|
| | White | | Black | | Hispanic | | Other* | | | |
| | N | % | N | % | N | % | N | % | N | % |
| 1 through 4 | 543,050 | 46.2 | 168,351 | 42.1 | 43,797 | 51.0 | 30,195 | 39.1 | 785,393 | 45.2 |
| 5 through 8 | 245,271 | 20.9 | 86,024 | 21.5 | 14,685 | 17.1 | 14,331 | 18.6 | 369,311 | 20.7 |
| 9 through 12 | 149,307 | 12.7 | 63,240 | 15.8 | 11,306 | 13.2 | 10,701 | 13.9 | 234,554 | 13.5 |
| 13 through 16 | 108,716 | 9.3 | 42,346 | 10.6 | 8,242 | 9.6 | 9,974 | 12.9 | 169,278 | 9.7 |
| 17 or more | 126,544 | 10.8 | 39,641 | 9.9 | 7,748 | 9.0 | 11,816 | 15.3 | 185,749 | 10.7 |
| Unknown | 1,663 | .1 | 311 | .1 | 41 | .1 | 311 | .4 | 2,326 | .1 |
| Total | 1,174,553 | 100 | 399,913 | 100 | 85,819 | 100 | 77,208 | 100 | 1,737,493 | 100 |

Source: Defense Manpower Data Center, Arlington, VA.

*Other includes such categories as American Indians, Alaskan natives, Asians and Pacific Islanders.

This exercise does not show minorities to be at a disadvantage relative to whites. But these numbers were calculated assuming that there would be no restrictive standards (e.g., aptitude, performance) applied to those in the 1- to 4-year tenure group to help make the decision regarding who will be cut. Such requirements would not be unreasonable to expect and could change the picture for minorities. Further, those with 9 through 12 years of sevice may not be overlooked when reductions are made.

Occupation is another contender for differential cuts. With only guesses being offered for the degree of overall drawdown, it is tough to prophesy exactly which positions will be eliminated as the services downsize. But, if they cut the "tail" (e.g., clerical and service and supply jobs) rather than pull the "teeth," minorities could be riffed disproportionately. Table 8 collapses the occupational areas presented above in Table 6 into three main occupational categories and six subcategories (including non-occupational). Given training investments, it would not be unreasonable to assume plans to make less drastic cuts within the highly technical fields. Also, deeper cuts for clerical jobs might occur since civilian substitution is more likely in this domain.

In light of such supposition, if one were to make a guess that the FY 1992 reductions were to be distributed as follows: 60,000 technical, 80,000 clerical, 50,000 craftsmen, 40,000 service and supply, 45,000 general military skills, and 25,000 non-occupational, or cuts ranging from 12 percent for technical and craftsmen to 26 percent for service and supply, to 30 percent for clerical, then the results might be:

| Race-ethnicity | Number cut | Percentage decrease |
|---|---|---|
| White | 195,400 | 16.6 |
| Black | 75,479 | 18.9 |
| Hispanic | 15,226 | 17.7 |
| Other | 13,895 | 18.0 |

Again these hypothesized reductions do not take into consideration the application of more stringent performance standards. Also, while a problem for minorities is hardly convincing from these conservative simulations, one must also consider that there will be a great reduction in the numbers of youth coming into service. New entrants will not replenish the numbers leaving. For example, as things stand now (i.e., using the 1989 minority percentage levels), while at least 66,000 to 75,000 blacks are expected to depart from the military in FY 1991, only 40,000 or so will be coming in. And things could get much worse.

**Table 8.—Number and percentage of active duty enlisted personnel by occupational categories within race-ethnicity groups (as of June 30, 1990)**

| Occupational category | Race-ethnicity | | | | | | | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|
| | White | | Black | | Hispanic | | Other[1] | | | |
| | N | % | N | % | N | % | N | % | N | % |
| White collar | | | | | | | | | | |
| Technical[2] | 345,438 | 29.4 | 97,101 | 24.4 | 21,788 | 25.3 | 17,860 | 23.1 | 482,187 | 27.9 |
| Clerical[3] | 149,554 | 12.7 | 93,482 | 23.4 | 14,774 | 17.2 | 15,541 | 20.1 | 273,351 | 15.7 |
| Blue collar | | | | | | | | | | |
| Craftsmen[4] | 314,339 | 26.7 | 71,191 | 17.8 | 18,964 | 22.0 | 20,207 | 26.1 | 424,701 | 24.4 |
| Service & supply | 94,435 | 8.0 | 47,187 | 11.8 | 6,761 | 7.9 | 8,141 | 10.5 | 156,524 | 9.0 |
| General military skills including combat | 199,463 | 17.0 | 70,860 | 17.7 | 16,234 | 18.9 | 11,914 | 15.4 | 298,471 | 17.2 |
| Non-occupational[5] | 71,324 | 6.1 | 20,092 | 5.0 | 7,298 | 8.5 | 3,545 | 4.6 | 102,259 | 5.9 |
| Total | 1,174,553 | 100 | 399,913 | 100 | 85,819 | 100 | 77,208 | 100 | 1,737,493 | 100 |

Source: Defense Manpower Data Center, Arlington, VA.

[1]Other includes such categories as American Indians, Alaskan natives, Asians and Pacific Islanders.

[2]Includes Electronic Equipment Repair, Communications and Intelligence, Health Services, and Other Technical and Allied occupations.

[3]Includes Functional Support and Administration occupations.

[4]Includes Electrical and Mechanical Equipment Repair and Craftsmen occupations.

[5]Includes patients, prisoners, officer candidates and students, persons serving in undesignated or special occupations, and those in basic or occupational training.

## Because of *the* Test

Blacks and Hispanics are expected to be disproportionately hit by the drawdown because of the anticipated tightening of entry, and specifically aptitude, requirements for military selection and job classification. Enlistment standards, and particularly operational cut scores, typically vary with recruiting conditions. When the supply is ample and the demand is low, standards are raised so as to maximize quality. Minority groups do not score as well on the Armed Services Vocational Aptitude Battery (ASVAB) used for these purposes. The ASVAB consists of 10 subtests which are configured into various composites. Verbal and mathematics subtests are combined to yield the Armed Forces Qualification Test (AFQT), which serves as a general measure of trainability and main entry hurdle. Other subtests (e.g., general science, electronics information, mechanical comprehension) are combined and used to augment selection decisions as well as serve as the primary job assignment tool.

The only dividend for service personnel planners may be the increased quality of its recruits. The fewer and fewer recruits will be expected to possess a high school diploma and to score at least within Category III on the AFQT. For convenience and reporting purposes, AFQT scores are converted into percentiles relative to the national youth population as follows:

| AFQT category | Percentile range |
|---|---|
| I | 93–99 |
| II | 65–92 |
| IIIA | 50–64 |
| IIIB | 31–49 |
| IV | 10–30 |
| V | 1–9 |

Each of the services sets formal minimum ASVAB standards and, when recruiting conditions permit, specifies higher quality goals. Applicants scoring in the lowest AFQT category—Category V—are ineligible by law to enlist. Category IV recruits are enlisted sparingly, with actual ceilings applied. Those scoring within Categories I through IIIA are actively sought for enlistment.

Since the mid-1980s, the services have enjoyed a quality bonanza. Over 90 percent of new recruits have had a high school diploma and about the same percentage have scored above Category IV. In FY 1989, about 90 percent of entering first-time recruits had a regular diploma (and additional 6 percent had alternative secondary school credentials) and 94 percent scored above Category IV. This impressive figure was even down a percent from the previous year. The services have maintained quality despite being immersed in the low point of the declining prime manpower pool. As end-strength and manpower requirements are shaved over the ensuing years, the services no doubt will want to get choosier and choosier as to who dons a uniform. The majority/minority score differential may hurt the latter in terms of qualification for military entry even more than before. The median AFQT percentile score for 18- to 24-year old whites is 59; for blacks it is 17; and for Hispanics it is 23. While 78 percent of white youth can be expected to score above Category IV, only 28 percent of blacks and 41 percent of Hispanics tend to score within the upper ranges.[27] Minorities also score lower on the other ASVAB composites used for enlistment qualification and job classification. This does not bode well for continued minority access to the benefits of military service.

Under 1984 *minimum* aptitude and education standards for enlistment, about 85 percent of white youth would qualify for the Army. The corresponding figures for blacks and Hispanics are 43 and 53 percent, respectively. The qualification rates for other services would be even lower. For example, again using minimum standards, roughly 22 percent of black youth would probably qualify for the Air Force.[28] And these rates are based upon the minimum "on the books" standards rather than the more restrictive operational cutting scores and quality goals. The odds of qualifying for service entry may get even worse.

Qualifying for selective military occupations is another matter. Again, test scores often preclude many minorities from gaining access to "high-tech" electronics technician jobs. Instead they serve disproportionately in functional support and supply jobs. All in all, blacks could be hit at both ends. They may not gain entry and they may be more likely to suffer from RIFs.

## Adverse Impact

Let's assume that *the* test is fair. Actually, the ASVAB has been subjected to intense scrutiny and "outside" testing experts have given the military's selection device high marks. But, though it may be free from statistical bias, this does not prevent adverse impact. Sure blacks are overrepresented in the military relative to population proportions, but not relative to military applicant proportions, which is the standard base from which to determine adverse impact or the lack of "outcome" fairness in selection.[29] Fiscal 1989 data indicate that 25 percent of applicants were black, but only 22 percent of accessions. The corresponding percentages for whites were 68 and 73. While the customary "4/5 rule" was probably met from this perspective, what the figures don't tell you is that many people are screened out

of the process before they are officially labelled "applicants." Applicants in military parlance are those who actually take the ASVAB. Because of aptitude prescreening in particular, many who walk in to talk to a recruiter don't even get invited to take the test.[30] And chances are, given their lower aptitude scores relative to whites, a substantial number of minorities are getting turned away even before they even get a chance to grab a number 2 pencil and fill in the grids of an ASVAB answer sheet.

It's interesting to note that the military really doesn't have to worry about adverse impact from a legal sense. Neither Title VII of the Civil Rights Act of 1964 nor Executive Order No. 11478 (nor the combined, amended, and reprinted version in 42 U.S. Code) applies to the military. The term "employee" when it appears in the "code" excludes members of the armed forces. So the fact that DoD has bothered to validate its test against training and now even job performance criteria and thus meets the Constitution's due process clause as well as the Title VII standards is a bonus. DoD directives require equal employment opportunities to be upheld for military personnel.

The question is, will DoD show such sensitivity in the standards it sets for entry? While the test is valid and higher scoring recruits, on average, outperform lower scoring recruits, no one has yet figured out the optimal standard or cutting score. How much quality is enough? If the services answer this question by saying "as much as we can get," then this is bad news for minorities. Although DoD has embarked upon a research effort to determine the required quality levels, the answer is not yet available and the drawdown is expected to have an effect before all the numbers are crunched.

## It's Hard To Give Peace a Chance

Concern over the dark side to the "peace dividend" is mounting and the press is spreading the word. Bailey Thomson of the *Orlando Sentinel* recently noted that the military is the nation's most integrated institution and asked, "what will its diminished role portend for young blacks?" He added that "thousands of youths who might not qualify in the future for the leaner armed services need other ways to serve, while getting a leg up on their careers."[31] *The New York Times* ran an extensive front page story with a similar message about the social impacts of the military's increasing selectivity. According to the article, minority applicants are "crushed" because they can't meet the rising minimum entry requirements. They settle for low-paying dead-end jobs.[32] The *Boston Globe* said that "these young men and women, and society, will suffer wrenching dislocations if no optional structure is devised to provide the security and growth potential that the military once offered."[33]

According to Charles Moskos, black leaders have never been thrilled with the military. Black elected officials traditionally do not support defense spending. Though the Congressional Black Caucus might hope that the peace dividend will be spent on domestic programs which would make minorities less dependent on military opportunities, the truth of the matter is, as a reporter for the *Los Angeles Times* claims, there are already "too many claims on the peace dividend." The "extra" money will go towards reducing the federal deficit.[34]

The special interest publication *Black Issues in Higher Education* recently printed a two-part series entitled "The Military, Education & Minorities," with a major theme being the impact of the drawdown.[35] Edwin Dorn of the Joint Center for Political Studies said that the anticipated effects of the troop reductions on blacks and Hispanics were "worrisome." Reporter Jacqueline Conciatore quoted the Chairman of the Joint Chiefs of Staff, General Colin Powell, as saying that "DoD must be 'cautious and sensitive' to the impact of troop reduction on minorities." Powell also said "I would be willing to bet you that you won't see a significant change in the racial-ethnic makeup within the armed services."[36]

## Minorities Are On the Rise as Defense Is On the Fall

If General Powell meant that the racial-ethnic proportions would remain fairly constant in the military, then he may be right. But how could he be in light of this latest evidence? Well, it is possible that

DoD will not let the services quench their thirst for quality. They could impose "quotas" on the proportion of lower scoring recruits. Not ceilings, but floors. And that might help minorities. The effect of aptitude quotas on the military is still open to debate since the question of how much quality is enough has not yet been resolved. But, as a rational employer, DoD may not welcome taking in more low-aptitude youth than it has to.

Another possible problem is reduced funds for recruiting and advertising. Together with the bottomed-out manpower pool and the gradual "browning" of America, this may keep minorities at the same overall proportions among accessions and the total force. But there is indeed a rub here as well. While the proportions might look O.K., the bottom line is that the force will be smaller. This means that even if the balance remains the same, with a 25 to 30 percent cut, at least 15,000 to 20,000 more black youth will be denied enlistment. And many, many more will be dismissed from the military—and its opportunities—into the civilian sector. These minority members may get jobs and survive in the economy, but could it be at the expense of those on a lower rung of the economic ladder? While perhaps a relatively small number in the overall scheme of things (e.g., out of 3.5 million black youth aged 18 to 24), it's dangerous to say "not to worry" about a percentage here and there and there. And if the exodus from the military as well as the enlistment denial rates are concentrated in a particular region (e.g., the South) then these relatively low numbers may not be relatively small for certain areas.

Though there is discussion of transition assistance in the form of separation pay, higher rates of and longer access to unemployment compensation, job training and placement assistance, extended opportunities to get in on the Mongomery GI Bill, and extended health care coverage, these benefits may be prohibitively expensive to offer and maintain and are short-term in nature. Further, they may not really compensate for the more tangible benefits which minorities in particular seem to find in the military and not on the outside. The post-service economic standing for veterans is a subject in much dispute. Though it is widely assumed that military veterans outearn their non-veteran counterparts, research findings are equivocal. Some studies supporting positive returns for veterans are suspect because of inadequate accounting of higher aptitude and education levels for the military group and/or failure to account for unemployment differences. Recently, groups of low-aptitude veterans were found to be worse off economically and socially compared with their non-veteran counterparts.[37] Military training does not assure a better post-service income. Though over 80 percent of military jobs have a civilian counterpart, the distribution of military and civilian jobs is not the same. Further, transfer from the military to the civilian sector is least problematic for technical jobs[38] which may not be as hard hit and in which minorities are underrepresented. And of course it's not likely that exiting servicemembers will be picked up by the defense industries. In fact, DoD cuts are hitting as the overall economy is slowing. Terms like "recession" and "increased unemployment" are becoming increasingly more common and alarming. It may be particularly difficult at this time for veterans and would-be recruits to be absorbed into the civilian economy. The military will be separating many who have not yet achieved journeyman status, separating others who have young families, and retiring some who can ill-afford to enter the job market at the entry level. Though enlisted personnel are more than adequately educated and possess many fine basic and job skills, civilian employers often have misperceptions or at best have policies of promoting from within.[39] Thus, those who are leaving may lose. And those who are denied entry may as well. Many will forego education, job training, character-building and respectable employment. If the services heed General Powell's advice to be sensitive to the impact of the downsizing on minorities, there will still be a void because of the queue seeking entry in addition to the current levels of minority enlistments. In other words, even more minorities are interested in joining the military than the sizable numbers who apply and are accepted. Though social reform is not the military's primary mission, it has indeed indirectly served the social good for over a century, employing and educating Indians, blacks, and immigrants.[40] Tomorrow's smaller military may continue to be egalitarian and afford training and education opportunities, but it will uplift fewer people. Other agencies will have to bear some of the responsibility, and if they don't, more youth will be lost even if democracy is gaining overseas. And that is the downside of the defense drawdown for military minorities. It's an important issue which needs attention, now.

# Notes

[1]W.S. Sellman, *The Role of the Military Psychologist in the Development of National Manpower Policy* (Presidential address before the Military Psychology Division of the American Psychological Association, Boston, MA: August 1990).

[2]Ibid.

[3]Gordon Adams and Stephen Alexis Cain, "Yes, We Still Need Defense Cuts," *The Washington Post*, 9 September 1990: D-2.

[4]Sellman, *The Role of the Military Psychologist.*

[5]As an update, it should be noted that because of Desert Shield, Secretary of Defense Chaney asked the Congress to modify the FY 1991 end-strength reduction from the numbers originally marked in the House and Senate versions of the DoD Authorization Bill. As a result of that request, in the final version of the Authorization enacted by Congress (PL-101-510), end-strength reductions were in fact set at 80,000 for this fiscal year.

[6]Richard Halloran, "Blacks and Women Find Roads for Advancement Through Life in Military," *The New York Times*, 26 August 1986: B-24.

[7]During this period, there was a scoring error in the newly implemented Armed Services Vocational Aptitude Battery (ASVAB) resulting in the enlistment of hundreds of thousands of low-scoring applicants, many of whom would not have even qualified for service entry had the test been scored correctly.

[8]See U.S. Department of Defense, Office of the Assistant Secretary of Defense [Force Management and Personnel], *Population Representation in the Military Services, Fiscal Year 1989* (Washington, DC: July 1990), A-4.

[9]Ibid.

[10]Though in the general population, education levels of blacks trail whites (e.g., 86 percent of 18-to 24-year-old whites are high school diploma graduates compared with 83 percent comparable blacks), in the military the opposite is true. This finding is partially attributable to enlistment standards that vary by level of education. Non-graduates must meet higher standards, which may eliminate many black youth without a diploma.

[11]For a discussion of this trend and data up to 1981, see Martin Binkin and Mark J. Eitelberg with Alvin J. Schexneider and Marvin M. Smith, *Blacks and the Military* (Washington, DC: The Brookings Institution, 1982). For subsequent data see U.S. Department of Defense, *Population Representation.*

[12] The topic of minority representation or overrepresentation in the military has received considerable attention. To some, overrepresentation is viewed positively, given the opportunities available in service. Others suggest that overrepresentation is deletorious to military cohesion and unfair to minorities who would bear too big a burden in time of war. For a discussion of these issues, see Binkin and Eitelberg, *Blacks and the Military.*

[13]Mark J. Eitelberg, *War or Welfare: The Military as an Agent of Social Change* (paper presented at the Biennial Conference of the Inter-University Seminar on Armed Forces and Society, Baltimore, October 1989).

[14]Charles C. Moskos, "Success Story: Blacks in the Army," *The Atlantic Monthly* (May 1986) 65.

[15]Lawrence J. Korb, "The Pentagon's Perspective," in *Who Defends America? Race, Sex, and Class in the Armed Forces*, ed. Edwin Dorn (Washington, DC: Joint Center for Political Studies Press, 1989) 23.

[16]For more details on pay and allowances as well as other benefits see U.S. Department of Defense, *Military Career Paths*, (North Chicago: U.S. Military Entrance Processing Command, 1989).

[17]This amount can be even greater—up to $25,000—for persons in particular skills with the Army and Navy.

[18]Holly Hexter and Elaine El-Khawas, *Joining Forces: The Military's Impact on College Enrollments*, (Washington, DC: American Council on Education, October 1988) 32. Comparable figures for whites were not provided.

[19]David Boesel and Kyle Johnson, *The DoD Tuition Assistance Program: Participation and Outcomes* (Arlington, VA: Defense Manpower Data Center, May 1988).

[20]U.S. Department of Defense, *Population Representation*, 33.

[21]Department of Defense, Office of the Assistant Secretary of Defense (Force Management and Personnel), *Human Resource Development in the Department of Defense: Issues and Initiatives for Military Selection and Classification.* A Report to the House and Senate Committees on Armed Services. (Washington, DC: July 1990) 2.

[22]See Janice H. Laurence, *Enlisted Personnel Quality: Changes and Consequences*, HII 89-23. (Alexandria, VA: HumRRO International, Inc., August 1989), 10.

[23]Department of Defense, *Population Representation*, p. 34.

[24]See Hexter and El-Khawas, *Joining Forces.*

[25]Mark J. Eitelberg, *Manpower for Military Occupations*, (Washington, DC: Office of the Assistant Secretary of Defense [Force Management and Personnel], April 1988): 169, 172.

[26]Andrew Moskos, "Black exceptionalism: Making it in the military," *Black Issues in Higher Education*, 8 (4) (26 April 1990): 76.

[27]These data are based upon a nationwide administration of the ASVAB in 1980. For details see, U.S. Department of Defense, Office of the Assistant Secretary of Defense (Manpower, Reserve Affairs and Logistics), *Profile of American Youth: 1980 Nationwide Administration of the Armed Services Vocational Aptitude Battery* (Washington, DC: March 1982). Despite the passage of 10 years, drastic changes in the scores for minority and majority members are unlikely given the stability of aptitudes over time. However, given the changing demographics of the youth population, an update may soon show a downward shift in the overall aptitude distribution if all other conditions remain the same.

[28]Eitelberg, *Manpower for Military Occupations.*

[29]See James Ledvinka, *Federal Regulation of Personnel and Human Resource Management* (Boston: P.W.S. Kent, 1982).

[30]Recruiters administer a shortened version of the AFQT known as the EST or CAST to prospective recruits. Low scorers are not sent forward to the Military Entrance Processing Stations (MEPS) to continue enlistment application and processing.

[31]Bailey Thomson, "As Military Shrinks, Will Equal Opportunity for Blacks?" *Orlando Sentinel*, 13 May 1990: G3.

[32]Peter Applebome, "As Armed Forces Cut Back, Some Lose a Way Up in Life," *The New York Times*, 7 May 1990: 1, D-12.

[33]"Thinning Military Ranks," *Boston Globe*, 15 May 1990: 12.

[34]See Melissa Healy, "Military Cutbacks Likely to Hit Blacks the Hardest," *Los Angeles Times*, 4 May 1990: 28.

[35]"The Military, Education & Minorities" (Parts I and II), *Black Issues in Higher Education* 7 & 8 (3 & 4) (12, 26 April 1990).

[36]Jacqueline Conciatore, "Effects of troop reductions on blacks, Hispanics concern Joint Center," *Black Issues in Higher Education* 8 (4) (26 April 1990) 17.

[37]See Janice H. Laurence, Peter F. Ramsberger, and Monica A. Gribben, *Effects of Military Experience on the Post-Service Lives of Low-Aptitude Recruits: Project 100,000 and the ASVAB Misnorming*, FR-PRD-89-29. (Alexandria, VA: Human Resources Research Organization, December 1989).



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[38]Stephen L. Mangum and David E. Ball, "The Transferability of Military-Provided Occupational Training in the Post-Draft Era, *Industrial and Labor Relations Review* 42 (2), (January 1989).

[39]Connie J. Schroyer, Linda A. Hansen, Pasquale A. Lerro, and Michael E. Benedict, *Analysis of the 1990 ARI Survey of Employers*, Working Paper MPPRG 90-05. (Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences, September 1990).

[40]See Eitelberg, *War or Welfare*.

# Impact of the Military Drawdown on Youth Employment, Training and Educational Opportunity

David W. Grissmer

## Introduction

Since World War II, U.S. military forces have been structured primarily on the basis of countering the threat posed by the Soviet Union and the Warsaw Pact. This threat dictated both the size and the mix of active and reserve Armed Forces. With the disintegration of the Warsaw Pact and the weakening of the Soviet Union, U.S. military forces will be reduced in size and reconfigured to meet a more diverse set of smaller threats worldwide.

This near-term reduction in military forces and subsequent long-term smaller military force will affect the employment, training, and education opportunities for the nation's youth. For the last 40 years, the armed services have been the largest employer of male youth. In 1979, 6.7 percent of 18 to 21-year-old male youth were in the Armed Forces (Kim 1980). The Armed Forces have also employed a disproportionate percentage of minority youth and an increasing percentage of women since the beginning of the All Volunteer Army in 1973. In 1979, 9.7 percent of black male youth aged 18 to 21 were in the Armed Forces, as were 7.6 percent of Hispanic male youth. In that same year, 0.6 percent of women aged 18 to 21 were in the military.

However, when considering the employment effects, a more important comparison is between those youth working full time and military personnel. In 1979, 14 percent of 18 to 21-year-old male youth working full time (including military employment) were in the armed services. For blacks and Hispanics, the corresponding figures are 25 percent and 16 percent, respectively. Among 18- to 21-year-old women working full time, 1.8 percent were in the military, with the corresponding percentages for black and Hispanic women being 3.8 and 1.4 percent, respectively.

The U.S. military not only serves as an employer, but also provides training and educational opportunities for those entering and leaving the Armed Forces. This training consists of 4 to 5 weeks of "boot camp" military training followed by 4 weeks to over a year of school training in particular military occupational skills (MOS). After completion of school training, individuals join units for on-the-job training that provides approximately half their skill proficiency. This training is supplemented throughout their career by courses on advanced equipment, supervision, and other subjects.

Approximately one-quarter to one-half of military skills have direct civilian counterparts, and military training is likely to provide enhanced opportunities for civilian earnings and employment. Even for those

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skills with no civilian counterpart completion of military training can have a "credentialing" effect (DeTray 1980) and provide evidence of characteristics desirable to civilian employers.

Those leaving the armed services also earn education benefits under the GI Bill. These benefits provide tuition and support for veterans attending colleges or certified training schools. Current benefits range from $10,800 to $25,000, depending on the individual's choice of service, skill, and length of service. Approximately 85 percent of an enlisted personnel cohort leaves the service before reaching retirement. Those who leave usually do so within the first 12 years of service, and these individuals are the most likely candidates to utilize their educational benefits. In Fiscal Year 1989, the Department of Veterans Affairs spent almost a billion dollars on GI Bill benefits (Digest 1989, 38).

Service members also can work toward degrees from civilian colleges while on active duty. This education is supported by the military through tuition payments. In FY 1989, $144 million was provided for this tuition assistance program (Digest 1989, 337).

The military drawdown may have two effects on educational benefits. The first is that fewer youth will be flowing through the military and qualifying for educational benefits. The second is that the value of educational benefits may decline, because recruiting for a smaller force will be easier, reducing the need for incentive programs such as educational benefits. This prospect is most likely for the Army, which now offers most of the educational benefits above $10,800 but is slated for the largest percentage reductions and thus the greatest decrease in recruiting difficulties.

## Purpose of This Paper

The military drawdown will affect the numbers of youths who are employed by the Armed Forces, trained by the military, and eligible for educational benefits through military service. The magnitude of these impacts will depend not only on the size of the reduction but also on how the armed services achieve their reductions and on what kind of longer term force emerges. The purpose of this paper is to anticipate the size of these likely effects under two drawdown options available to the armed services.

We will consider the three main effects:

- The change in the employment of youth;
- The change in the number of youths receiving military training; and
- The change in the number of youths leaving the military each year with educational benefits.

We will use the number of military personnel in their first 5 years of service as an indicator of youth employment, and compare this to the 20 to 24-year-old labor force. We will use as a measure of those trained the number of individuals in their first year of military service. This is a better measure than the number entering military service because approximately 10 percent leave before completing training. We will use the number of losses between years of service 1 to 5 and 6 to 15 as indicators of potential users of educational benefits.

In evaluating the impact of the military drawdown, three periods of time need to be considered. The first is the baseline period, which we will assume is the 1980s. The second is the transition period, which we will assume to be 1992-97. The third period is the longer-term steady-state period—from approximately 2000 to 2010. Although the first and third periods are both characterized by stable force size, the later force size will be approximately 25 percent smaller than the earlier force size. For each of these steady-state environments, the number of accessions, the size of the military labor force, and the number of losses remain relatively stable.

The transition period must be distinguished from the longer steady-state period because quite different effects might become evident. During the transition, the effects are not simple trends between the two steady states, and the precise course of these effects will depend primarily on size and pace of

the drawdown as well as the strategy followed to achieve the drawdown. We will evaluate two strategies for drawdown and contrast the training, employment, and educational effects of each during the transition period and the longer-term steady-state with the baseline period.

## The Military Drawdown: Its Size and Pace

The precise size and pace of the military drawdown is still in negotiation between Congress and the Bush administration, and the extent of the drawdown will only become known as each year's budget is passed. However, each service is to develop a 6-year plan which specifies the size and composition of its forces. After these plans are submitted to the Office of the Secretary of Defense (OSD) for evaluation and modifications, they become part of the Department of Defense 6-year budget plan submitted in the President's budget to Congress. This provides one indication of the administration position on the size of the drawdown. Other indications are provided by the Senate and House Armed Services Committees' reports. These documents provide Congressional guidance on the extent and pace of the drawdown.

The service plans usually reflect a beginning negotiating position and as such reflect a relatively small and slow drawdown. Because of party differences, the President's budget is likely to specify a smaller and slower drawdown than that desired by the Senate and House Armed Services Committees. The FY 1991 experience confirmed this. The service submissions called for an overall 16 percent reduction in the size of the Armed Forces over a 4-year period. However, the House (in House Report 101-822 and Report 101-665) called for a much steeper reduction in military size (see Table 1), with a 7.2 percent reduction in FY 1991, and extrapolations show an overall 28 percent reduction over 4 years. The Senate called for a 17 percent reduction by FY 1995 (Committee on the Armed Services, 1991). These two scenarios provide reasonable bounds for the size and pace of the reductions envisioned prior to the Persian Gulf war.

**Table 1.—Enlisted force reductions (Pre-Persian Gulf war, House Armed Services Committee)**

| | Percentage reduction from FY90 | | End strength (thousands) | |
|---|---|---|---|---|
| | FY91 | FY94 | FY90 | FY94 |
| Army | 9.5 | 35 | 665 | 413 |
| Air Force | 6.8 | 25 | 460 | 345 |
| Navy | 5.8 | 25 | 440 | 330 |
| Marine Corps | 2.9 | 20 | 174 | 139 |
| All Services | 7.2 | 28 | 1739 | 1227 |

The distribution of the reduction among the armed services reflects the nature of the smaller, more diverse, and more widespread threats which force planners will use for designing future military forces. Although these distributions will be the subject of intense interest and negotiation over the next few years, the Army and Air Force will likely have the largest percentage reductions because of their prominent role in NATO and the defense of Europe. By contrast, the more diverse and widespread threats likely to emerge in the future are better matched to the missions of the Navy and Marine Corps.

The FY 1991 budget and the FY 1991 House and Senate reports were prepared prior to the war with Iraq. It is still not clear how the war will affect the defense drawdown, but initial indications are that the primary effect will be to simply delay the beginning of the drawdown, without changing its size or pace. In fact, some analysts believe that while the FY 1991 force cuts will not be made, the FY 1992 through FY 1994 goals will remain unchanged.

For the purposes of this paper, we have assumed a post-Iraq scenario which reduces the Armed Forces by 25 percent from 1980s levels (see Table 2). The Army declines by 33 percent and the Air Force by 24 percent, while the Navy and Marine Corps decline by 8 and 10 percent, respectively. We believe that these estimates represent a mid-range among the various estimates that are made.

**Table 2.—Enlisted force reduction scenario (annual average end-strength in thousands)**

| | 1980–89 | 1992–96 | 2000–10 | % Change (1980–89 to 2000–10) |
|---|---|---|---|---|
| Army | 668 | 495 | 450 | 33 |
| Air Force | 492 | 451 | 432 | 8 |
| Navy | 478 | 364 | 350 | 24 |
| Marine Corps | 176 | 158 | 143 | 10 |
| All Services | 1813 | 1469 | 1375 | 25 |

## Strategies for the Drawdown

The long-term effects of the drawdown on military employment, training, and eligibility for educational benefits will not likely be exactly proportional to the size of the reduction in force size. That is, a 25 percent reduction in force size may not bring proportional changes in the number trained, the number employed, and the number eligible for educational benefits. Differences will likely emerge to somewhat change this simple proportionality rule. For instance, a smaller force will bring in higher quality recruits with lower attrition rates which will require accession levels lower than determined by simple proportional rules. These higher quality recruits might also utilize educational benefits more often once they leave the service.

The near-term effects are also likely to be quite different than those determined by simple proportionality rules. The near-term effects will be determined primarily by the strategy chosen to achieve the drawdown. One strategy would be to simply protect those in today's force from involuntary separations and achieve the smaller force size through reduced hiring. This strategy is often called "reduction through natural attrition," since no present employees are involuntarily terminated. This would reduce accessions below even the future steady-state requirements of the smaller force size and result in lower numbers of youth trained and employed by the military during the transition. Losses would also decline sharply during the transition because of the fewer number of attrition-prone younger soldiers.

At the other extreme, the bulk of the force reduction could be achieved through increased separations of current service personnel. Under this strategy, accession levels would be reduced only to a level required for the future smaller force size, and separations would be increased to the level required to achieve the reduction. The separations can be taken at different experience levels within the force. We will refer to first-term, mid-level and career separations. First-term separation would be directed at those in the first 4 years of service, while mid-level separations would involve those with 5 to 10 years of service. Senior separation would involve those with over 10 years of service.

The choice of strategy is more difficult and risky for the military services because of their hiring policies. The military services rarely hire laterally into their work force. They bring all new hires in at the bottom and achieve their senior career force only through aging and promotion. Thus, the level of accessions is a primary determinant of the size of the career force 15 years later. Accessions levels which are too low can result in future shortages of senior personnel, and since no lateral hiring can occur, these shortages cannot be easily fixed. So, straying from the "steady-state" accession levels required to achieve the desired future seniority is unwise.

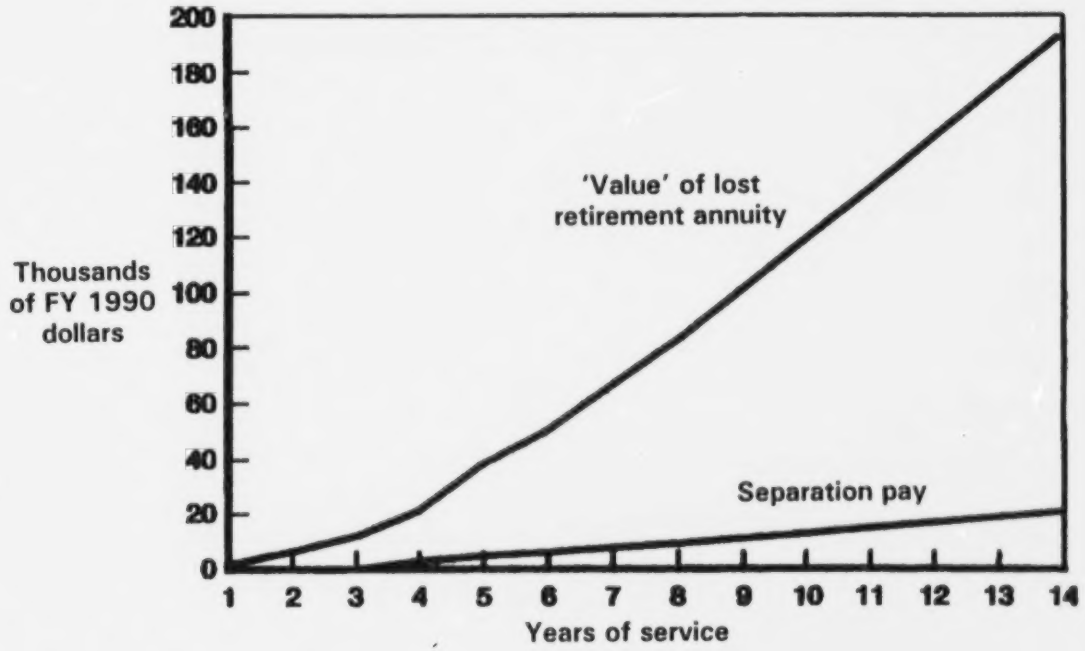
This is one reason why the force reduction will likely involve large numbers of separations. A second reason is that today's force is probably the most senior force in history. The All Volunteer Force has achieved historically high levels of retention since its beginning in 1973. This high retention has gradually built up a force which has a high percentage of personnel with 10 or more years of service. Reducing accessions during a drawdown with no corresponding cuts in more senior personnel will increase this seniority even more. Too much seniority means slowed promotion for younger personnel and mismatches between an individual's skills and jobs.

Unfortunately, at the present time, separation of more senior personnel is problematical because of the military retirement system. Vesting occurs for military retirement at 20 years of service, at which point servicemembers receive a COLA adjusted lifetime annuity which equals 50 percent of their pay at 20 years. Separation prior to 20 years results in no retirement benefits. This vesting system has the effect that an implicit contract exists between the service and military member of no involuntary separation after about 14 years of service. Thus, although senior separations might be desirable, they cannot be achieved unless current separation payment policies are changed. Work is currently underway to design a career separation payment for use during drawdown which would treat senior personnel equitably if separated. If such a package were available during the drawdown, involuntary separations would likely occur among personnel with between 1 and 18 years of service.

## Two Specific Drawdown Strategies

We will attempt to bound the range of effects by choosing two drawdown strategies for our estimation. They are called junior and senior drawdown. Junior drawdown allows involuntary separations primarily among those with less than 10 years of service. The second allows separation of those with between 2 and 18 years of service. In both scenarios, accession levels are set during the drawdown at 95 percent of that required to sustain the smaller force size. These two scenarios capture the current uncertainty in how the force will be reduced.

**Figure 1.—Comparison of current enlisted separation pay to value of lost retirement annuity**



It is currently uncertain how the services will allocate the involuntary separations across the force. One reason for this uncertainty is that the level of separation payments that would be available to more senior personnel is uncertain. Enlisted personnel who are involuntarily separated with less than 7 years of service receive no separation pay. Those with over seven years of service would receive separation pay equal to 10 percent of current pay for each year of service completed. At 10 years of service, an enlisted person would receive a full year of base pay at involuntary separation—an amount equal approximately to $18,000.

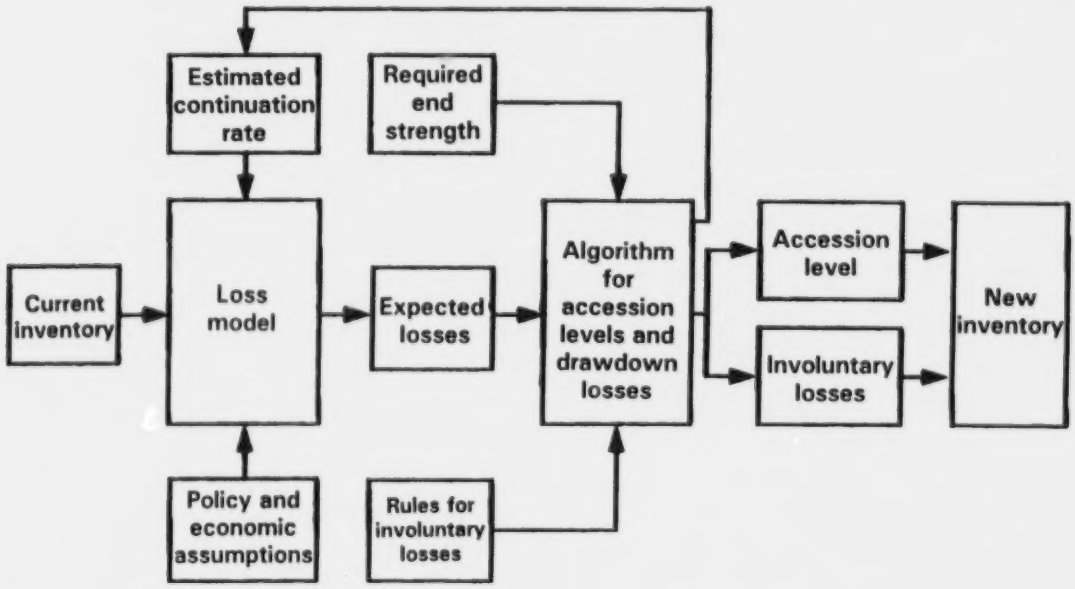
For more senior personnel, these payments are far less than the expected value of their future retirement benefit (see Figure 1). There are current plans to propose legislation for enhanced voluntary career separation pay for more senior personnel. If such a plan becomes available, the services would likely make voluntary offers to individuals in the senior force who are in overage skills and occupations. The number of individuals taking such offers is also currently uncertain, but that number would have a large effect on the number of more junior personnel who would need to be involuntarily separated.

The first option, called junior separation, would be the likely scenario if senior separations are not initiated. The second scenario assumes that career separation pay would be available and that voluntary senior separations would occur.

## The Manpower Model and Assumptions

We have developed a "behavioral inventory projection model" (Francisco 1991) (see Figure 2) for each of the military services, which annually estimate their inventory of personnel given assumptions about accessions and assumed voluntary and involuntary loss rates. The model tracks approximately 190 categories of personnel disaggregated by years of service, gender, race, education, and aptitude. Future continuation rates can be established through linear or logistic regressions on historical data or set based on simple averages of past rates.

**Figure 2.—Schematic of model used for the analysis**



The model projects an annual inventory by assuming accession levels cannot fall below 95 percent of the long-term sustaining level. The model first estimates voluntary losses in each category and then estimates the additional losses required to meet the end strength while maintaining accessions above 95 percent of the sustaining level. The two scenarios differ only in where additional losses are allowed to occur. The first case restricts losses to those with less than 10 years of service, while the second allows more senior separations. In each case the mix of involuntary separations is chosen by trying to achieve a balanced future experience mix similar to that experienced in the 1980s. Of course, the greater flexibility provided by the 2- to 18-years-of-service option provides the most balanced force shaping.

The model generates annual accessions and the annual inventory and losses by years of service and demographic characteristics. We run the model through the year 2010, although later estimates should be treated as simple simulations rather than predictions of future events. We have assumed for these results that voluntary loss rates are at FY 1987 through FY 1989 levels for each service. These loss rates are close to average loss rates over the 1980s.

# Results

## The Employment Effect

Tables 3 and 4 show that in the longer term the Armed Forces will annually employ about 315,000 to 325,000 fewer youths serving with 1 to 5 years of service (YOS 1-5) and 108,000 to 127,000 fewer with between 6 and 15 years of service (YOS 6-15). In the long run, these numbers are relatively insensitive to the specific drawdown scenario used. This represents about a 30 percent decrease in the junior group and a 19 to 23 percent decline in the more senior group.

**Table 3.—Number of YOS 1-15 youths employed in the armed services (thousands)**

| Scenario | 1980–89 | 1992–96 | % Change (1980–89 to 1992–96) | 2000–10 | % Change (1980–89 to 2000–10) |
|---|---|---|---|---|---|
| Junior | 1055 | 715 | 32 | 741 | 30 |
| Senior | 1055 | 741 | 30 | 732 | 31 |

Table 5 shows the civilian labor force and the numbers employed and unemployed in 1988. We will compare the YOS 1-5 group to the 20- to 24-year-old labor force and the YOS 6-15 group to the 25- to 34-year-old labor group. The unemployment rates show correspond to rates of 9 percent for the younger group and 5 percent for the older group.

**Table 4.—Number of YOS 6-15 youths employed in the armed services (thousands)**

| Scenario | 1980–89 | 1992–96 | % Change (1980–89 to 1992–96) | 2000-10 | % Change (1980–89 to 2000–10) |
|---|---|---|---|---|---|
| Junior | 563 | 531 | 6 | 436 | 23 |
| Senior | 563 | 519 | 8 | 455 | 19 |

In comparing the accession decline to the comparable male civilian labor force groups, we will assume that 13 percent of the military groups are female. This represents the proportion in today's force and will probably not change significantly at lower force levels.

**Table 5.—Civilian labor force (millions)**

| | Labor force | | Employed | | Unemployed | |
|---|---|---|---|---|---|---|
| | 20–24 | 25–34 | 20–24 | 25–34 | 20–24 | 25–34 |
| Male | 7.69 | 19.74 | 6.92 | 18.70 | .68 | 1.04 |

The decline of 278,000 males employed in the military with YOS 1-5 represents an increase of less than 4 percent in the 20- to 24-year-old civilian labor force. The decline of 102,000 in the male YOS 6-15 group represents an increase in the 25- to 34-year-old civilian labor force of 0.5 percent.

The effect on the unemployment rate for these groups is impossible to predict. Some of these individuals may find jobs which would have not been created without the availability of the additional leavers from the military. Others may find jobs which would have gone to others. The unemployment effect will depend on precisely what kinds of substitutions occur. If substitutions occur strictly within the male 20- to 24-year-old age group, then 20- to 24-year-old unemployment effects will be larger than if substitution occurs for older or younger males or for women.

The unemployment effect also depends partly on these youths' employability and the extent to which they might substitute for men and women of similar age or others. It also depends on the specific economic conditions present. If 1988 economic conditions had prevailed, the labor force increase of 278,000 in the aged group 20 to 24 would occur in conjunction with 680,000 in that age group already unemployed. For the older group, the increase of 102,000 would coincide with 1,040,000 unemployed. The unemployment effects will certainly be much smaller than assuming that all increases in the labor force would fall into the unemployment pool. More likely one-quarter to one-third might fall into the unemployed pool, and this would raise the younger age unemployment rates by 1 to 1.5 percent, while it would increase the older rate by 0.3 percent.

During the transition period, the military employment of the junior group will be somewhat lower by about 25,000. However, this would represent only a small additional increase in unemployment during the drawdown period.

## The Training Effect

Table 6 shows the number of military personnel in YOS 1 under the two scenarios and for the different time periods. In the long term, the data shows an approximately 75,000 to 80,000 decline in the number of youth annually receiving military training from levels in the 1980s. This is about a 28 percent decline. The more junior drawdown shows a decline of an additional 10,000 annually during the drawdown period. If we make similar assumptions as above for the percentage of males in this group, then this represents about 4 to 5 percent of the future civilian 20- to 24-year-old labor force who will not receive military training.

**Table 6.—Number of YOS 1 personnel (thousands)**

| Scenario | 1980–89 | 1992–96 | % Change (1980–89 to 1992–96) | 2000–10 | % Change (1980–89 to 2000–10) |
|---|---|---|---|---|---|
| Junior | 274 | 188 | 31 | 198 | 28 |
| Senior | 274 | 195 | 29 | 195 | 29 |

This group will then be dependent on civilian employers or schools for training. If these individuals are employed in the civilian labor force, the training received from civilian employers will be more

directly job-related than military training. In addition, of course, they will be spending additional years in the civilian rather than the military work force, and presumably—other things equal—would receive equivalent or better job-related training for their specific civilian jobs. Of course, not all might be in training or working during this time, and some types of civilian jobs might not provide very useful training. Recent studies of the value of military training provide mixed indications of whether individuals are better off in terms of future earnings and employability if they follow military vs. civilian paths into the work force (DeTray 1980, Fredland and Little 1980, and Laurence 1989). If the effects are close to neutral and the lower military spending produces positive effects on the civilian economy, then it is possible that simple substitution occurs, with civilian training replacing military training with no overall effects on long-term earnings.

## The Education Effect

Tables 7 and 8 show the number of 1-5 YOS and 6-15 YOS losses from the services under the different scenarios. The loss rates are quite sensitive to the time period and scenario chosen.

**Table 7.—Number of YOS 1–5 losses (thousands)**

| Scenario | 1980–89 | 1992–96 | % Change (1980–89 to 1992–96) | 2000–10 | % Change (1980–89 to 2000–10) |
|---|---|---|---|---|---|
| Junior | 189 | 144 | 24 | 158 | 16 |
| Senior | 189 | 135 | 33 | 126 | 33 |

**Table 8.—Number of YOS 6–15 losses (thousands)**

| Scenario | 1980–89 | 1992–96 | % Change (1980–89 to 1992–96) | 2000–10 | % Change (1980–89 to 2000–10) |
|---|---|---|---|---|---|
| Junior | 51 | 55 | -8 | 51 | 0 |
| Senior | 51 | 77 | -51 | 44 | 14 |

In the transition period for the 1–5 YOS group, the losses decrease by 24 to 31 percent from 1980 levels, with the expected larger levels of 1–5 YOS separations from the junior scenario. It may be surprising that losses do not increase during this period from those of the 1980s. There are two reasons they do not increase. First, levels of accessions have continually declined from 1980 through the present due to the high retention experience of the Armed Forces during the 1980s. Higher pay levels are responsible for much of this higher retention.

Second, during the drawdown, accession levels will continue to decline. Although some of those accessed will be involuntarily separated—raising losses above steady-state force size levels—the lower level of accession dominates the involuntary separations in determining overall losses.

In the longer run, the loss levels for the junior and senior drawdown decline by 16 and 33 percent, respectively. These differences reflect the fact that higher accession levels are needed in the 2000-10 period if a more junior drawdown is executed today. Lower than required accession levels today mean higher than required levels 10 to 15 years from now.

In the transition period for the group aged 25 to 34, the losses in the junior drawdown scenario increase slightly, but there is a large increase in this group for the senior drawdown. This pattern simply

reflects where involuntary separations are targeted for the two scenarios. However, there is an interesting longer-term effect. For the junior separation scenario, the losses in the longer term do not change from 1980 levels, whereas they increase by 14 percent for the senior separation scenario. This difference simply reflects the fact that a junior drawdown today means fewer senior separations 10 to 15 years from now. The junior drawdown reduced the size of the cohorts entering in 1990–95, and as these smaller cohorts reach seniority in 10 years, they will suffer fewer losses in the 2000–10 period. On the other hand, senior separations today mean larger cohorts in 1990–95, and these larger cohorts will have larger losses throughout their lifetime.

## Effects of Reducing Reserve Forces

The Selected Reserves currently number 1.17 million as compared to 2.0 million for the active forces. The Selected Reserves' job is a part-time job requiring 12 weekends during the year and two weeks of full-time training annually. Approximately 90 percent of reservists are moonlighters—holding both the reserve job and a full-time regular job (Grissmer et al. 1989). While initial drawdown plans called for few or no reductions in reserve forces, current DoD plans call for roughly equivalent percentage reductions in active and reserve forces.

Since reservists are not full-time, these reductions will not have employment effects on the full-time labor force. However, there would be additional training and education effects from a reserve drawdown.

The training effect arises because the reserve forces provide youths with training in military and occupational skills similar to the active force. This full-time training is provided by the active force and consists of exactly the same training received by active enlistees. The number of youths accessed into the enlisted force was 94,000 in FY 1990. This is about one-third the level of active force accessions. If the reserve forces were reduced by 25 percent, the accession level would in the longer term probably also drop by 25 percent, with the result that approximately 25,000 fewer youths would be trained annually.

However, there is the possibility that a much greater percentage decline would occur in the non-prior service group. One policy option in a smaller force would be to link active and reserve service. Individuals enlisting for active duty would also incur a Reserve obligation. This would greatly expand the pool of prior service accessions and lower the requirement for non-prior service personnel. If this occurred, the decline in youth trained annually could increase to 50,000 to 75,000.

Youths in the Reserves probably receive training more likely to be transferable to civilian skills than those on active duty, since the reserve forces are weighted less toward combat capability and more toward military support capability. However, since reserve forces are only part-time, they only slowly receive on-the-job training and their proficiency level probably lags behind those of enlistees in the active force.

The selected reserve forces also earn educational benefits. Educational benefits are provided to all reservists through the GI Bill program, and several states also offer supplementary benefits for those in the National Guard. The federal benefits provide $5,600 annually for support and tuition. Lower accession levels would mean fewer individuals qualifying for these educational benefits.

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# Educational Resources Available for Transition of Servicemembers

Clinton L. Anderson

## Introduction

The transition of servicemembers from active duty to civilian life is an ongoing process involving thousands of soldiers, sailors, airmen, and marines routinely each year. Since the post-Vietnam era build-down of the mid-1970s, these separations from military service can generally be characterized as "normal attritions" through such personnel actions as retirements, completions of enlistment commitments, and discharges for hardship or for the good of the service. Servicemembers complete their first or second term of service either as enlisted members in the lower ranks or junior officers and revert back into the civilian sector. Some join the reserve component forces either as part of fulfilling their enlistment contracts or simply because they want to continue their military experience but on a part-time basis. Their primary jobs, however, are expected to be provided through the civilian sector. Some leaving active military service will use their veterans' preference benefit and become Department of Defense (DoD) employees or take other jobs in civil service. Just as in entering the active military service, most servicemembers leave voluntarily or through mutual consent of themselves and the military.

On the other hand, "reduction-in-force" (RIF) means that for purpose of meeting manpower constraints, servicemembers are removed from active military service against the will of both the individual involved and the military service. In other words, the employer must lay off workers no longer needed to accomplish the organization's job requirements, even to the point of breaking commitments either legal or moral to those workers. The results of the 1990 reader survey conducted by the *Army Times*, *Air Forces Times*, and *Navy Times* show that servicemembers are "deeply worried that looming budget cuts will hurt their military careers" and many feel that they will not be treated fairly if separated involuntarily from the military. Vice Admiral Mike Boorda, the Chief of Naval Personnel, responded to the survey:

> It is not surprising that people in the military are very concerned. Everywhere they turn, they see news reports—some accurate, some sensationalized—that talk about cuts in the defense budget and cuts in personnel. How would they not be worried? (*Army Times* 17 September 1990)

As with other employers, the military services hope to meet most manpower constraints through normal attrition, minimizing the RIF whenever and wherever possible. But many servicemembers have little trust in the leadership of the United States to protect "people programs" within the military services. An *Army Times* quote from an unnamed respondent seems to capture the deep sense of impending betrayal:

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Note: The author is senior education consultant with the American Association of State Colleges and Universities and with the American Council on Education. The views expressed in this paper are those of the author and do not necessarily reflect those of any agency past or present with which he has been associated.

> Breaking faith and breaching contract with a superpatriotic, highly skilled defense force cannot be done with dignity. Words will not numb the pain, pay the bills, find replacement jobs, regain trust or restore the faith in those who have so honorably served an ungrateful nation. (*Army Times* 17 September 1990)

It is servicemembers caught in the RIF and returned involuntarily, through no fault of their own, to the civilian sector who should evoke particular sympathy and concern of the military and the federal government in general. Most of those involved have dedicated their lives to military careers and many have no particular orientation to civilian occupations. Most have families and all the obligations inherent to sustaining these families. Most have sound educational backgrounds at least at the secondary education level. Most enlisted personnel, however, lack postsecondary education, particularly higher education relevant to civilian job requirements that will facilitate their career growth within civilian occupation fields. Most do have GI benefits, such as the Montgomery GI Bill, that they can use as veterans for education.

This paper will concentrate on educational resources available for the transition of active duty servicemembers to the civilian sector. Since all known projections indicate that the Army will be the military service to be affected first and perhaps the most by a military build-down of the 1990s, this paper will reflect educational resources using principally Army examples. In addition, this paper will raise pertinent issues regarding those resources and suggest approaches that could be taken to further facilitate the transitioning process. The educational resources outlined in this work are focused primarily on postsecondary educational opportunities that may be particularly worthwhile to servicemembers eligible for inclusion in RIF actions.

## Composition of the Military Services

Planning for and the execution of a military build-down during the 1990s as a result of the end of the Cold War and the establishment of a desired "peace-time" structure of military forces must reflect the national interests of the United States. Thus far in 1990, Americans have seen their military forces used rather extensively in Panama and in the Middle East. With a 1990 adversary of the United States, namely Iraq, having an army reportedly of around a million soldiers and American troops sent to deter it from aggression, it is indeed difficult to contemplate reducing the 1989 U.S. Active Army of approximately 764,000 by 25 percent or more. Nevertheless, that has been the projection made by the Bush administration and the Congress.

Numbers and projections are subject to rapid change as national strategic and budget issues for the 1990s are clarified. In fact, the *Army Times* announced on September 10, 1990, that "'Stop-loss' takes effect," indicating the Operation Desert Shield would cause extended tours for thousands of servicemembers. *The Washington Times* on September 13, 1990, indicated that the Army would call up selected retirees involuntarily to active duty due to the Persian Gulf operation. During the fall of 1990 thousands of reservists and National Guard personnel were, in fact, called to active duty. On November 23, 1990, the Secretary of Defense delegated to the Secretary of the Army "authority to suspend any provision of the law relating to retirements or discharges from the service." Based on that authority, the Army ordered a halt to voluntary discharges and retirements for most officers and enlisted personnel, including those who have completed their active duty service commitment. (Office of the Secretary of Defense 1990) Keeping the rapidly changing events in mind, the statistics presented below can only provide general insight into the composition of the military and possible scenarios for a build-down.

When thinking broadly of DoD and the U.S. Coast Guard (a Department of Transportation component during peace time), over 5.4 million people compose the total mobilization force (see Table 1). Out of that force, approximately 2.1 million personnel serve as the "active component" (see Table 2). (This does not account for reservists and National Guardsmen serving on active duty.) This is contrasted to the nearly 1.7 million reservists and members of the National Guard that comprise the reserve component

forces. In addition, there are over a million civilian employees of DoD, otherwise known as the civilian component.

When considering the active component for postsecondary education purposes, the more than 1.1 million spouses and other adult family members should not be forgotten. In other words, between 50 and 60 percent of the active component personnel within the military services have spouses and/or other adult family members as dependents (see Table 3). Although the actual percentages differ among the military services, approximately 11 percent of the active component forces are female servicemembers (see Table 4).

**Table 1.—Total mobilization personnel FY 1989**

| | |
|---|---|
| Active component | 39.2% |
| Retired | 29.8% |
| Ready reserve | 30.5% |
| Standby reserve | .5% |
| 100% = 5,402,000 | |

Source: Armed Forces Information Services, *Defense 90 Almanac*, 15.

**Table 2.—Active duty officer/enlisted personnel as of March 31, 1990**

| | Army | Navy | Marine Corps | Air Force | Total DoD |
|---|---|---|---|---|---|
| Officer | 106,255 | 71,597 | 20,087 | 102,195 | 300,134 |
| Enlisted | 639,712 | 505,856 | 175,816 | 436,667 | 1,758,051 |
| Academy cadets | 4,226 | 4,450 | — | 4,229 | 12,905 |
| Total | 750,193 | 581,903 | 195,903 | 543,091 | 2,071,090 |

Source: Armed Forced Information Services, *Defense 90 Almanac*, 24.

**Table 3.—Adult family members of active duty servicemembers as of March 30,1990**

| | Army | Navy | Marine Corps | Air Force | Total DoD |
|---|---|---|---|---|---|
| Spouses | 399,249 | 306,330 | 90,302 | 361,684 | 1,157,565 |
| Other adult dependents | 5,592 | 3,310 | 471 | 4,195 | 13,568 |
| Total | 404,841 | 309,640 | 90,773 | 365,879 | 1,171,133 |

Source: Armed Forces Information Services, *Defense 90 Almanac*, 31.

**Table 4.—Active duty women in uniform as of December 1989**

| | Army | Navy | Marine Corps | Air Force | Total DoD |
|---|---|---|---|---|---|
| Women in enlisted force | 11.4% | 9.9% | 5.0% | 13.7% | 11.0% |
| Women in officer force | 11.4% | 10.5% | 3.4% | 13.0% | 11.2% |

Source: Armed Forces Information Services, *Defense 90 Almanac*, 30.

The military has been particularly successful in attracting high-achieving minority youth. For example, the Army's enlisted force consists of 40.3 percent minority personnel (31.6 percent black, 4.3 percent Hispanic, 4.5 percent others). In all of DoD, minorities comprise 31.1 percent of the total active-duty enlisted force (see Table 5).

**Table 5.—Minorities in uniform as of December 1989**

| | Army | Navy | Marine Corps | Air Force | Total DoD |
|---|---|---|---|---|---|
| | | | Percent | | |
| Black officers | 10.7 | 3.9 | 5.1 | 5.5 | 6.9 |
| Black enlisted | 31.6 | 17.1 | 20.8 | 17.3 | 22.8 |
| Hispanic officers | 1.7 | 2.2 | 2.2 | 2.0 | 2.0 |
| Hispanic enlisted | 4.3 | 5.7 | 7.0 | 3.8 | 4.8 |
| Other minority officers | 3.1 | 2.7 | 2.0 | 2.8 | 2.8 |
| Other minority enlisted | 4.5 | 5.6 | 3.1 | 3.3 | 4.4 |
| Total minority officers | 15.6 | 8.8 | 9.3 | 10.4 | 11.8 |
| Total minority enlisted | 40.3 | 28.3 | 30.9 | 24.4 | 31.9 |

Source: Armed Forces Information Services, *Defense 90 Alamanac*, 30.

With respect to postsecondary education, less than 5 percent of the total officer strength on active duty has less than a bachelor's level of higher education. Nearly 35 percent of all officers have degrees beyond the bachelor's level. Fewer than 2 percent of the active-duty enlisted personnel have less than a high school diploma or a high school GED certificate. Ninety-five percent of enlisted personnel possess a high school diploma or a General Education Diploma (GED) or other alternative education certificate, but no bachelor's degrees (see Table 6).

**Table 6.—Education of the active force as of December 31, 1989**

| | |
|---|---|
| Total officers | 301,410 |
| Below baccalaureate | 14,044 |
| Baccalaureate only degree | 163,843 |
| Advanced degree | 106,500 |
| Unknown | 17,023 |
| | |
| Total enlisted | 1,796,983 |
| No high school diploma or GED | 35,857 |
| High school graduate or GED | 1,633,006 |
| Alternative Education Credential | 14,809 |
| 1-4 years of college (no bachelor's degree) | 66,572 |
| Baccalaureate degree | 40,780 |
| Advanced degree | 3,092 |
| Unknown | 2,867 |

Source: Armed Forces Information Services, *Defense 90 Almanac*, 30.

The enlisted force is clearly a target group for higher education, especially at the associate and bachelor's degree levels. Many among this group enlisted immediately after high school. Many were searching for training and education but chose the military instead of becoming traditional college students. Many did not have the financial resources needed to go to college, while others merely wanted a break in their academic studies. Some came from family backgrounds that did not give postsecondary education a high priority. *Considerable numbers of them were attracted to the military by the educational benefits promised by military recruiting efforts.*

The military training and experience of active duty enlisted personnel are generally technical, as shown in Table 7. In order to achieve their military occupational specialty, rate, or rating, enlisted personnel must successfully complete the required military service school courses. Many of these technical courses have been deemed worthy of academic credit by the American Council on Education. Combat arms and combat support servicemembers at sergeant levels are heavily engaged in managerial responsibilities in personnel, logistics, financial, and supervisory areas. Consequently, all military occupational specialities lend themselves to some higher education that complements military jobs and supplements military training. While in-service, many enlisted servicemembers have engaged in on-base education programs and taken academic tests such as College Board's College Level Examination Program (CLEP), the American College Testing Program Proficiency Examination Program (ACT/PEP), and the Defense Activity for Nontraditional Education (DANTES) Subject Standardized Test (DSSTs), as discussed later in this paper.

**Table 7.—Active duty enlisted personnel skills and specialties as of December 1989**

| Skill/specialty | Number |
|---|---|
| Electrical/mechanical equipment repair | 364,563 |
| Combat | 298,124 |
| Administration & clerks | 279,527 |
| Electronic equipment repair | 177,846 |
| Communications & intelligence | 172,417 |
| Supply & service handlers | 162,725 |
| Health care specialists | 99,542 |
| Craftsmen | 70,555 |
| Other technical | 41,929 |
| Other | 129,755 |
| Total | 1,796,983 |

Source: Armed Forces Information Services, *Defense 90 Almanac*, 24.

## Possible Scenarios for a Military Build-Down

Although the list of possible scenarios is virtually endless, this effort will concentrate on several that may accommodate the national interests of the United States during the decade of the 1990s. The underlying assumption is that the Cold War is over, the Soviet Union is no longer the "Evil Empire" locked in a life-death ideological struggle with the West, and the United States no longer requires massive strategic and tactical military systems aimed at deterrence and massive retaliation by land, sea, and air. Using 1989 troop-stationing data, many of the 344,000 American troops located in western and southern Europe based on Cold War plans and strategic agreements may no longer be needed.

The largest potential troop cut will probably come from the 254,000 stationed in the old Federal Republic of Germany and West Berlin. If the potential threat in Korea remains relatively dormant, troop reductions will also occur among the 146,000 servicemembers stationed in and around East Asia and the Pacific Rim (approximately 49,000 in Japan and Okinawa; 46,000 in Korea, as of March 31, 1989). Yet, based on the 1989 and 1990 military troop requirements in Panama and the Persian Gulf/Saudia Arabia and perhaps a new "World Order," rapidly deployable forces from all services in considerable strengths will continue to be needed on a regional basis during the 1990s. For the Army, a mix of both heavy and light combat forces appear to be needed (e.g., Armor, Infantry, Field Artillery, Light Infantry, Air Defense, Engineers, and Special Forces, along with their combat support and combat service support). If the lessons regarding the 1990 call-up of selective reserve forces are learned, perhaps the reserve component forces will be increasingly used and relied upon for rapid mobilization and deployment to meet regional military requirements by U.S. military forces.

With the assumptions outlined above, the three following scenarios are presented.

The first scenario envisions a gradual reduction of active duty military forces, principally within the Army, contingent upon troop agreements with the Soviet Union and allies in East Asia, and deployment

of forces in the Persian Gulf area. This scenario would most likely be handled by reducing normal recruitment and reenlistment quotas, reducing numbers of officers coming onto active duty from Reserve Officers' Training Corps (ROTC) units, retirements, and voluntary early-out separations, and enhancing quality control military personnel management programs executed by the various services. No RIF may be needed to implement this type of build-down. But it would require the DoD Authorization and Appropriations Acts to maintain manpower ceilings that will accommodate this scenario. Based on the DoD Fiscal Year 1991 Authorization and Appropriations Acts, this scenario has apparently been adopted for this year. The 1991 DoD Authorization Act provided for a reduction of 100,000 active duty servicemembers but contained an escape clause permitting DoD to exceed authorized strength levels by up to 1 percent in 1991. This, in effect, reduces the personnel cuts from 100,000 to 80,000. This Act, however, does order a reduction of 463,405 in active duty strength over 5 years, leaving a military of about 1.6 million active duty members. (*Army Times* November 5 1990, 3)

The second scenario projects a moderate reduction of forces such as that proposed in committees of both the House of Representatives and the Senate prior to the deployment of U.S. forces to the Persian Gulf area. This reduction would involve first-year manpower cuts of between 100,000 and 130,000 servicemembers. As fiscal year cuts are projected above the 100,000 threshold, RIF actions seem unavoidable. If manpower cuts can be kept below the 100,000 mark, RIF actions may be avoided altogether or applied very minimally. (See Table 8 for a summary of congressional proposals as of August 1990. Even though the 1991 DoD Authorization and Appropriations Acts have been finalized at 100,000 active duty personnel reductions with an escape clause, these proposals give insight into congressional thinking.) Both the House and Senate Armed Services Committees have directed the military services that, in order to meet reduced manpower ceilings, they should (a) minimize involuntary separations of servicemembers with between 6 and 20 years of service, (b) limit recruiting, (c) cut the number of retirement-eligible personnel still on active duty, and (d) reduce first-term reenlistment rates (*Navy Times* August 6 1990, 3).

The third scenario would entail deep and swift manpower cuts. Reportedly the Senate Armed Services Committee has indicated that a reduction of 285,000 active duty servicemembers is needed to cut the federal budget by $13 billion (*Navy Times* August 6 1990, 3). If agreements could be negotiated to drastically reduce U.S. troop strength in Germany and Korea and the situation in the Persian Gulf could be resolved peacefully, this third scenario might well come into play. The Active Army could perhaps be reduced from over 764,000 in 1989 to approximately 500,000, with the other services sustaining somewhat less drastic cuts. Major RIF actions would be unavoidable. Full-blown transition management would be needed to insure military careerists caught in a RIF were given appropriate opportunities to adjust to the civilian sector by finding jobs, housing, medical care, and the community support needed for sustaining the livelihood of themselves and their families.

Whether any of these scenarios or something entirely different actually occurs, transition is generally less painful if the individual servicemember has the skills and knowledge needed to obtain a civilian job in a career field in which he or she is comfortable and has the ability to succeed up a chosen career ladder, even though not in the military. Historically, the federal government has recognized the worth of educational opportunities by authorizing a variety of GI Bill educational benefits targeted toward helping veterans prepare themselves educationally for working and living as productive citizens of the United States. In addition, educational opportunities are available for servicemembers while on active duty. Postsecondary education credentials (e.g., the associate, bachelor's, master's and doctor's degrees) are recognized both within the military and in the civilian sector as important personal achievements and often serve as keys to job selection and training, promotion, and even retention. Educational credentials help servicemembers and veterans to be competitive in the job markets and career fields, as well as preparing them to do actual work inherent in their specific jobs.

**Table 8.—Summary of congressional proposals for reducing manpower within Department of Defense as of August 6, 1990**

| | House of Representatives | Senate |
|---|---|---|
| | 129,500 active duty reductions[1] | 100,000 active duty reductions[2] |
| Army | 68,500 | 40,000 |
| Air Force | 36,500 | 35,000 |
| Navy | 20,000 | 22,000 |
| Marine Corps | 4,500 | 3,000 |

Source: *Navy Times*, 6 August 1990, 3.

[1]Requires involuntary separation by October 1, 1991 of approximately 21,500 Army personnel, 13,500 Air Force personnel from active-duty forces; adds 20,927 selected reservists.

[2]Adds 400 Selected Reservists

# Department of Defense Policy Regarding Voluntary Education Programs

Historically, voluntary education programs of active duty servicemembers have been directed more toward self-development of the individual as a member of society than toward providing well-trained members of a military machine (Anderson & Kime 1990). Postsecondary education has been aimed toward (1) the servicemember as a unique individual, (2) the service person as a member of a specific armed service, and (3) the service person as a member of society at large (Berry 1974, 27).

Currently, Department of Defense Directive 1322.8 states the official DoD policy (Office of the Secretary of Defense 1987), requiring the military services to establish and maintain voluntary education programs that provide opportunities for servicemembers to achieve educational, vocational, and career goals. Access to these opportunities is to be as available to military personnel as to citizens in the civilian sector. These opportunities include not only secondary, postsecondary, and vocational programs and testing, but also in-service educational guidance and counseling by qualified personnel. The departments are required to encourage the use of voluntary education programs to enhance the servicemember's "military effectiveness and prepare for positions of greater responsibility in the Military Services" (Office of the Secretary of Defense 1987, 2). The Army, Navy, Air Force, and Marine Corps provide educational staff, finances, and other resources for the operation of these voluntary education opportunities to meet the needs of the military services. The military services also issue regulations that govern the conduct of their voluntary education programs.

This same DoD directive spells out the function and responsibilities of the Defense Activity for Nontraditional Education Support (DANTES). The mission of this in-service DoD agency, administered by the Department of the Navy, is to support the voluntary education functions of the Office of the Secretary of Defense (OSD) and the military services by "administering nontraditional education programs, managing specified contracts for education services, providing educational and informational materials, conducting special projects and developmental activities, and performing other management and education support tasks" (Office of the Secretary of Defense 1987, 7-1).

DANTES replaced the United States Armed Forces Institute (USAFI) in 1974. It provides servicemembers in all the military services with a wide range of examination and certification programs. It operates an independent study support system and an examination score recording and reporting system. DANTES is the leading proponent agency as well as advocate for nontraditional education

within the Department of Defense and, perhaps, the whole United States. As the composition, structure, and mission of the military services change— and severe budget constraints seem inevitable in the 1990s— DANTES' job will become even more critical in helping servicemembers to fulfill their voluntary education needs and aspirations.

## In-Service Tuition Assistance Program

Since May 7, 1948, the principal vehicle for helping servicemembers afford the costs of participating in college programs and courses has been the Tuition Assistance Program (TA). The significance of the Tuition Assistance Program is that servicemembers have the means to participate in college courses at minimum costs without depleting the Veterans Educational Assistance benefits that the servicemember may be entitled to receive. The level of support for tuition assistance is a clear barometer of a military service's attitude toward educational development: when tuition assistance is reduced, enrollments decline. When it ceases, most soldiers, sailors, airmen, or marines simply cannot afford to go to school. After their first term of service, servicemembers eligible for the Montgomery GI Bill can begin using their GI Bill benefits while in the military. Often servicemembers resist this option and persist in reserving these educational benefits for use after they have actually separated from the military service.

The Tuition Assistance Program began by providing 100 percent of the tuition for military personnel enrolled in accredited institutions. Because of budgetary considerations, the U.S. Congress later limited the payment of tuition assistance from 75 percent to up to 90 percent for enlisted soldiers in grades E-5 and above with less than 15 years of military service. The services can reduce the percentage of tuition assistance below the maximum allowed by Congress and place additional restrictions on the payment of tuition assistance due to fiscal necessity. In instances where specific military services have attempted to eliminate tuition assistance or drastically reduce the percentage of payment, storms of protests have arisen from thousands of servicemembers. Generally, the military services maintain the 75 percent payment rate.

Data from recent studies indicate that participation in the Tuition Assistance Program correlates strongly and consistently with both retention in the military and enlisted promotions (Boesel & Johnson 1988). In a special Navy report regarding the Tuition Assistance Program, the two major conclusions were:

> Seventy-five percent of the TA users are prime retention candidates in the E-4 to E-6 pay grades. For example, the average TA user has been in the Navy over six years and has completed almost two years of college credit since enlistment.
>
> The availability of TA was cited by a majority of the users as an important factor in their decisions to enlist and reenlist in the Navy. For many it was the deciding factor. TA is perceived as an entitlement or right. Reductions in the level of assistance, as with any other benefit, have a negative impact on morale, consequently, the incentive to stay in the Navy (Naval Training Systems Center 1988, 5).

The Tuition Assistance Program remains the principal funding mechanism for in-service college participation. As the military changes in the 1990s and this funding mechanism competes for scarce dollars within the military structures, advocates for voluntary education opportunities for servicemembers will be continuously challenged to assist in the preservation of this program. Since voluntary postsecondary education is not commonly a high priority for the operationally oriented military decisionmaker, there will be temptation to sacrifice tuition assistance as budget cuts are made. It requires wisdom and a genuine appreciation of the potential of education for commanders and senior civilians in the DoD budget process to realize that education programs must be the foundation for the combat training of the coming century. In addition, it eases the transition of servicemembers as they leave the service.

General Colin Powell, currently the Chairman of the Joint Chiefs of Staff, told the Army's Forces Command Commanders in 1989:

> As commanders, we can all think of instances in which the value of continuing education has been demonstrated to us personally and professionally. We should reflect on that value as it pertains to our uniformed and civilian components. Continuing education strengthens the foundation for training and improved job performance; it causes the force to develop intellectually, enhances promotion potential, and allows individuals to work toward personal and professional goals (Powell 1990, 1).

## Education Incentive Programs

Veterans' educational benefits in America have roots that reach back to the colonial era and the Revolutionary War. Historically, veteran's benefits have been considered compensation for men and women who have served honorably in the Armed Forces during wartime (Esposito 1989). Three GI Bills existed from 1944 to 1976 (World War II, Korea, and Vietnam era). These entitlements permitted millions of veterans to participate in educational programs and build lives for themselves and their families in the civilian world.

With the deletion of the military draft, the All Volunteer Army was struggling for survival in the post-Vietnam environment both as a concept and as an operational military force. Recruitment goals were unattainable even with acceptance of large numbers of non-high school graduates and personnel with below-average Armed Services Vocational Aptitude Battery (ASVAB) scores. Educational incentives were critical to entice bright, ambitious young people to enlist and reenlist in either the active-duty or reserve forces of the all-voluntary Armed Forces.

The introduction of the Veterans Educational Assistance Program (VEAP) in 1977 marked a major policy change in the purpose and design of educational benefits. Prior to 1977, GI Bill benefits were entirely funded by the Veterans Administration with no payments required of servicemembers. Beginning with VEAP, the Congress shifted to a contributory system of matching funds. Today, education incentives, including the Montgomery GI Bill and special "kickers" such as the Army and Navy College Funds, are recognized ways the federal government encourages the recruitment and retention of capable servicemembers. Such incentives can be extremely valuable to the serious servicemember-student who is interested in receiving a quality college education but is short on cash. Many "above average" high school graduates are attracted by these incentives, especially when coupled with tuition assistance of up to 75 percent for approved courses taken while in service.

On October 19, 1984, Public Law 98-525 was signed, establishing the "new GI Bill." It was made permanent in 1987 and its name changed to the Montgomery GI Bill. By December 1989, 1 million servicemembers had signed up to participate by committing themselves to contribute $1,200 from their military pay. This money is not reimbursable to the servicemember unless used for educational purposes through the program. February 1990 statistics show the Army with 88 percent of its new recruits contributing $1,200; the Navy, 82 percent; the Air Force, 77 percent; and the Marine Corps, 87 percent (Montgomery 1990).

Representative G.V. "Sonny" Montgomery comments on the Montgomery GI Bill:

> Now, nearing the fifth anniversary, the Montgomery GI Bill has been hailed by one of our military leaders as "the most significant legislation this century." In the opinion of many, it is responsible for saving the All Voluntary Force because of the attractiveness of its education benefits to a dwindling pool of eligible recruits . . . Education, more than any one element of our society, will determine our course as a free and productive country. (Montgomery 1990, 1-2)

In prepared congressional testimony, July 12, 1990, the Principal Deputy Assistant Secretary of Defense for Force Management and Personnel stated that the Montgomery GI Bill (MBIB) "provides the principal incentive for high quality applicants who would not otherwise enlist, to join the military." (McKernan 1990, 4). She described the Montgomery GI Bill as a "system":

> The MGIB system is a continuum of activity from the time prospective recruits first learn about the benefit at the recruiting office, through the briefing when they enter active duty and elect to participate, to the formal out-brief when the individuals separate or retire. During the separation counseling, the Montgomery GI Bill is discussed with the departing member, at which time they are encouraged to use the education benefit. The DVA (Department of Veteran Affairs) then sends additional materials further explaining the MGIB educational benefit program. (McKernan 1990, 6)

The high participation rates noted above show how many young men and women contribute to the fund, presumably with some hopes to use it and go to college later in life. It is early to draw firm conclusions, since the first veterans eligible left military service only two years ago, but the initial rates of utilization of the GI Bill seem low. (Only about 10 percent of those separated from active duty and eligible for Chapter 30 benefits had begun to use them by early 1990.) *Programs that encourage veterans to use their benefits, and the funds they in fact have contributed, are needed and in the national interest.* Among other things, vigorous voluntary education programs while the servicemember is on active duty whet appetites and start future veterans on the right track. Programs aimed at encouraging education in the National Guard and Reserves, where many veterans serve, can help. Programs are needed that recognize that the veteran is a "nontraditional" student with a particular kind of experience—military experience— that should be blended into the education the veteran chooses to pursue. DoD considers the use of the Montgomery GI Bill benefits to be "particularly important to the Service men and women who will be involuntarily separated during the drawdown of the Armed Forces" (McKernan 1990, 6).

The Department of Veterans Affairs administers the Montgomery GI Bill program and funds the basic benefits package. The individual military services pay for any "kickers" serving as additional educational incentive packages. The Montgomery GI Bill and other incentive programs do not provide for in-service education management and counseling services. Benefits are not available to servicemembers during their first term of service.

Education incentive programs do not relieve the military services of their responsibility for funding of education center operations and tuition assistance for in-service personnel. In essence, the education incentive programs are designed to attract quality, education-oriented young people into the military with the promise that specific benefits will become available once the servicemember becomes a veteran and goes to college. Education while the servicemember is on active duty remains a function of the separate military service, which must provide for this support in terms of tuition assistance, education staff personnel (education services officers, specialists, and counselors), and availability of quality educational programs.

## In-Service Education Center Operations

Organization and administrative structure for in-service voluntary education programs is provided at on-base education centers. For example, college programs are administered in the Army by 241 Army education centers and 391 Army learning centers operated around the world on such U.S. Army installations as posts, bases, camps, and stations and in communities in Europe. These Army education centers are staffed with approximately 1,350 Department of the Army civilian personnel of whom more than 450 are education guidance counselors who provide the principal management and administration of voluntary education programs and support services. The Education Services Officers (ESOs) within Army Education Centers located in the continental United States are responsible for selecting colleges to

participate and for the memoranda of understanding with colleges and universities that offer college programs on the military installations. In overseas commands, contractual agreements for postsecondary programs are managed at the major Army command level. Servicemembers know that on most Army installations there is an Army Education Center to serve them. Similar education center operations exist on Air Force, Marine, and Navy installations, including many larger Navy vessels.

The ESO or education specialist who is in charge of the installation education center is usually under the direct supervision of the established military command structure and works for a senior military staff officer within the local command system. Education is an integral function of military command at all levels. Each military service headquarters has a director of education and staff to serve as the principal advocate of voluntary education programs.

The availability of postsecondary programs and funding through tuition assistance is a function of the military command structure. DANTES assists local military education centers by providing a variety of nontraditional educational programs and services. The supporting colleges and universities provide an array of more traditional instructional programs and courses. Blending of these efforts at the local level is essential for providing the servicemember a coherent, cost-effective, high-quality, and relevant program of study. This process is complicated by the mobile nature of military personnel. Coordination and articulation among installation postsecondary programs are essential to avoid duplication or loss of credits and to provide servicemembers with degree plans that have built-in guarantees for transferability. In this way a servicemember can begin at a base in the United States, transfer to Europe or Asia and then back to a base in the United States, and continue efforts toward completion of an associate or bachelor's degree.

## Two In-Service Approaches to Degree Programs

During the mid-1970s, the Air Force developed the Community College of the Air Force (CCAF) to provide in-service degrees based in large part upon credits earned from service school courses and on-the-job experience, supplemented by general education courses taken with civilian colleges and universities. The Army and the Navy chose a different route. They contracted through DANTES with the American Association of State Colleges and Universities (AASCU) for the Servicemembers Opportunity Colleges (SOC) to articulate the desired associate and bachelor's degree programs among accredited civilian institutions that serve on or near military installations. Consequently, instead of degrees issued by the military services, soldiers and sailors earn degrees from accredited civilian colleges and universities.

Air Force officers fly the aircraft that "fight the war" for that military service. Its enlisted personnel are the technicians who maintain the planes and perform other technical functions, many of which have a high correlation with jobs in the civilian sector. The Air Force sought and obtained through Congress legislation that permitted it to establish an in-service "community college" with degree-granting authority for vocational associate degrees closely aligned with military jobs. Often these degrees are useful to veterans seeking employment in similar occupations in civilian life.

On the other hand, the high-density military occupational specialties in the Army are infantrymen, armor crewmen, field artillery crewmen, air defense artillery crewmembers, and combat engineers. These military specialties have little correlation with jobs in the civilian sector. In the 1970s the Army felt that a vocational degree in these specialties, even if possible, would be of little value to an Army veteran seeking employment outside the military.

The Army leadership—understanding that its non-commissioned officers perform managerial and supervisory functions involving personnel, supplies, equipment, and often budget at unit levels—felt that the enlisted force, particularly in the combat arms and combat support branches, would be served by associate degree programs emphasizing management and management-related disciplines. Moreover, having these degrees offered and awarded by regionally accredited civilian colleges and universities

would allow an infantryman with a degree in management to readily transfer to the civilian sector with a credential respected by civilian employers. The Navy, like the Army, opted to use civilian colleges and universities to offer and award degrees for its sailors.

To complement the Servicemembers Opportunity Colleges' degree programs, the Army established the Army/American Council on Education Registry Transcript Service (AARTS) to assist civilian college and universities in evaluating credit earned through nontraditional means by active duty military personnel. AARTS transcripts contain American Council on Education (ACE) credit recommendations for learning acquired through formal service school courses, MOS experience, and college-level standardized tests, including CLEP, DSST, SAT, and ACT/PEP. AARTS transcripts are designed to resemble official college transcripts and contain the seals of both the Army and ACE. AARTS is endorsed by the American Association of Collegiate Registrars and Admissions Officers. Currently, AARTS transcripts are available for active-duty enlisted soldiers who entered the Army on or after October 1981 and remained on active duty on or after January 1984. This service provided by the Army facilitates the blending of credits based on nontraditional education methodologies with traditional degree programs offered by civilian colleges and universities throughout the United States.

## Colleges and Universities Dedicated to Educating Servicemembers

Many colleges and universities recognize the educational needs of the servicemember and his or her family members. More than 700 postsecondary institutions are members of the Servicemembers Opportunity Colleges, a consortium of 13 national education associations and institutional members pledged to ease the difficulties of servicemembers seeking higher education. All institutions and associations that are part of SOC subscribe to *SOC Principles and Criteria*. Virtually every institution serving servicemembers on or near a military base has a memorandum of understanding with the military installation that sets forth specific policies and procedures by which that institution will offer programs for personnel. Most of these institutions have a strong track record of blending traditional and nontraditional education into their degree programs and have made a concerted effort to remove administrative hurdles that hinder servicemembers' participation in coursework.

Traditional college admissions practices often work to the disadvantage of the servicemember qualified for college-level work. While more traditional colleges often severely limit their recognition of academic achievement though military training, colleges that support servicemembers take training into account more fully in granting admission and credits.

In addition, institutions that support servicemembers:

- Recognize the GED high school equivalency certificate/diploma, using the American Council on Education recommendations concerning academic performance, and accept and record previously successful postsecondary study as part of the servicemember's program requirements, if appropriate;
- Recognize learning gained from specialized training and experience in the military services or elsewhere;
- Establish competency by nationally recognized means, such as standardized tests;
- Publicize the alternative admissions procedures available to servicemembers;
- Conduct timely evaluation of educational records and relevant experiences of servicemembers;
- Waive formal admission for servicemembers seeking enrollment in course work for transfer to another institution; and
- Emphasize degree planning to include contracts for degree where appropriate. (Servicemembers Opportunity Colleges 1990, 4-6)

In recognition of the special needs of servicemembers, supporting educational institutions assist them in incorporating nontraditional instruction and study in the completion of a degree program. Often these colleges recognize and accept independent study for credit. They advise and assist servicemembers to make use of nontraditional or less formal study modes when formal course work needed for degree completion is unavailable. In addition, many provide their own modes of nontraditional instruction or, through listing in their publications, make students aware of acceptable forms of nontraditional instruction available through other sources. In demonstrating their understanding of and commitment to servicemembers, supporting colleges and universities:

- Publicize widely to their faculty and students the nature of their commitment to programs and activities offered on behalf of servicemembers;
- Provide effective administrative staffing and processes to give adequate support of programs for servicemembers;
- Develop procedural directives for instructors,counselors, admissions officials, and program officers governing special requirements of servicemembers;
- Ensure the comparability of off-campus courses to those on-campus, while recognizing and accommodating programs to the particular needs of the adult learner;
- Designate a contact office or person for servicemembers;
- Designate a senior administrative official to oversee programs for servicemembers and veterans and to monitor institutional compliance with memoranda of understanding and other agreements:
- Conduct staff orientation programs to prepare full-time and adjunct faculty to work with the adult part-time learner;
- Provide scheduling on a planned program basis rather than by individual courses; and
- Ensure access to all courses needed for degree completion by scheduling at appropriate locations and times, not necessarily related to the regular academic calandar. (Servicemembers Opportunity Colleges 1990, 6-7)

For veterans returning to civilian life to begin or continue study, supporting colleges and universities provide appropriate evaluation of military training, experience, and prior study, and other services similar to that afforded servicemembers. They encourage veterans to continue or complete study started during service or interrupted by duty requirements.

While each institution operates autonomously, each must adhere to accreditation standards and requirements of states in which it operates. It must comply with memoranda of understanding, contracts, or other types of agreements to offer programs for the military. It must meet standards set by the Department of Veterans Affairs and be approved in order for students to receive veterans' educational benefits payments. It must attempt to satisfy the needs of the military service as well as the student learners. A masterful juggling act on the part of an institution is required if it is to be successful.

Historically, the University of Maryland has taken a lead role in supporting the military services with voluntary postsecondary education programs. With the growth of education programs in the post-World War II period under the leadership of USAFI, a serious void arose from USAFI's lack of direct accrediting capability. This brought forth institutional involvement in Armed Forces education (Berry 1974, 59). In the late 1940s, the University of Maryland established the College of Special and Continuation Studies. Its first classes were conducted at the Pentagon. Today, the University of Maryland University College continues to conduct programs throughout Europe and Asia, as well as at the Pentagon, and on installations in the State of Maryland. Its catalog includes educational opportunities for U.S. military and government personnel and their families as an important part of its "History and Scope." Each year the University College holds commencement ceremonies in College Park, Heidelberg and Tokyo (University of Maryland University College 1990, 3).

Another of the many institutions that have made a strong commitment to voluntary education in the military services is Park College, whose main campus is located in Parkville, Missouri. Currently it has military resident centers at 33 military installations (Air Force, Army, Navy, and Marine Corps) as well as at National Guard and Reserve Units. Its largest degree completion programs are in Management and Computer Science. President Donald J. Breckon describes Park College's Military Resident Center System:

> Park College employs administrators at all these sites, along with support staff members. A senior faculty member is employed to be academic director. The administrator and academic director combine their efforts to locate faculty, all of whom have credentials reviewed, evaluated and courses approved by the program coordinators on the home campus. An elaborate faculty development program exists, as well as peer, self, and student evaluation accomplished with the annual Faculty Performance Review.
>
> Classrooms are designated, computer labs are established and programs are implemented. The key to all such programs is provision for student services.
>
> Registrations are handled on site, as well as the processing of financial aids and benefits. Text books are sold on site. Written program plans are developed for each student, that lists all courses required for the degree, with a term course completion schedule of academic requirements. A transcript is generated at the end of each semester instead of a grade report, so that students always have an up-to-date list of courses completed, and courses remaining are indicated on their program plans.
>
> Attendance policies accommodate military mission commitments, as for example "temporary duty assignment." Classes are scheduled in eight- and nine-week terms, so as to complement rather than deter from the primary military mission commitment.
>
> Libraries are established on the base, and students are given access to the home campus library via computer and modem.
>
> American Council on Education guidelines for awarding military credit are fully utilized, as are CLEP and DANTES exams. The Park College student is thus assured of as much advanced placement as can be justified through recognized academic criteria. (Breckon 1989, 12-13)

Even though each supporting institution has its own policies and procedures the policies and procedures, outlined above, can serve as an example. A broad cross-section of institutions support the military student, including:

- Public community, junior, and technical colleges (e.g., Barton County Community College, Big Bend Community College, Brookdale Community College, Central Texas College, City Colleges of Chicago, Pikes Peak Community College, Trident Technical College);
- Senior state institutions (e.g., Austin Peay State University, Cameron University, Florida State University, Indiana University, Kansas State University, New Mexico State University, Northwestern State University of Louisiana, Ohio University, Oklahoma State University, Troy State University, University of Alaska-Anchorage, University of Louisville, University of South Carolina);
- Two-year private colleges (e.g., Dean Junior College, Fisher College, Georgia Military College, Newbury College, Sullivan Junior College of Business);
- Senior private colleges and universities (e.g., Chaminade University of Honolulu, Chapman College, Hawaii Pacific University, New York Institute of Technology, Strayer College, Upper Iowa University);
- Institutions with religious affiliations ( e.g., Incarnate Word College, Lakeland College, Liberty University, Methodist College, Our Lady of the Lake University of San Antonio, Saint Leo College, Wayland Baptist University);

- Specialty schools (e.g., Embry-Riddle Aeronautical University, John Jay College of Criminal Justice of the City University of New York); and
- Historically black colleges (e.g., Fayetteville State University, Norfolk State University, Paine College).

Of the 735 SOC institutions, 69 percent are public and 31 percent are private institutions. Colleges and universities that subscribe to the American Council on Education's *Principles of Good Practice for Alternative and External Degree Programs For Adults* (1990) are generally institutions capable of supporting the Armed Services and their servicemembers (See Table 9 for an overview of these principles).

**Table 9.—Overview of the principles of good practice for alternative and external degree programs for adults**

**Principle 1: Mission Statement**
The program has a mission statement that reflects an educational philosophy, goals, purposes, and general intent and that clearly complements the institutional mission.

**Principle 2: Personnel-Faculty and Academic Professionals**
Faculty and academic professionals working in alternative and external degree programs share a commitment to serve adult learners and have the attitudes, knowledge, and skills required to teach, advise, counsel, and assist such students.

**Principle 3: Learning Outcomes**
Clearly articulated programmatic learning outcomes frame the comprehensive curriculum as well as specific learning experiences; in developing these outcomes the program incorporates general student goals.

**Principle 4: Learning Experiences**
The program is designed to provide diverse learning experiences that respond to the characteristics and contexts of adult learners while meeting established academic standards.

**Principle 5: Assessment of Student Learning**
The assessment of a student's learning is based on the achievement of comprehensive and specific learning outcomes.

**Principle 6: Student Services**
The policies, procedures, and practices of the program take into account the conditions and circumstances of the adult learners and promote the success of those students.

**Principle 7: Program Administration**
The administrative structures and the human, fiscal, and learning resources are sufficient, appropriate, and stable for accomplishing the program mission.

**Principle 8: Program Administration**
Evaluation of the program involves faculty, academic professionals, administrators, and students on a continuing, systematic basis to assure quality and standards, and to stimulate program improvement.

Source: American Council on Education 1990, 8-9.

# Performance Data and Information Regarding In-Service Education Programs

Fiscal Year 1989 data indicate that, throughout the Department of Defense Voluntary Education Program, over 523,000 individual enrollments occurred in undergraduate courses during that year. Over 55, 000 individual enrollments occurred in graduate courses. More than 27,000 degrees were conferred

on servicemembers during the year. (See Table 10 for FY 1989 Voluntary Education Program individual enrollment and degree completion data.) Due in large part to fiscal constraints on the availability of tuition assistance for servicemembers, FY 1989 data showed a 10 percent decrease in undergraduate course enrollments (i.e., a drop of 52,014 enrollments from FY 1988 data ) and a 40 percent decrease in graduate course enrollments (i.e., 37,290 fewer enrollments than shown in FY 1988 data).

**Table 10.—DoD voluntary education program individual enrollment/degree completions, Fiscal Year 1989**

| | Army | Navy | Marine Corps | Air Force | Total DoD |
|---|---|---|---|---|---|
| Individual enrollments | | | | | |
| High school completion | 1,145 | 165 | 809 | 4 | 2,123 |
| Non-credit courses | | | | | |
| Language | 94,805 | 0 | 0 | 2,375 | 97,180 |
| Military specialty | 89,602 | 2,259 | 981 | 2,594 | 95,436 |
| Basic skills | 60,348 | 18,868 | 7,117 | 1,478 | 87,811 |
| Postsecondary | | | | | |
| Undergraduate | 180,117 | 107,766 | 29,888 | 205,626 | 523,397 |
| Graduate | 15,878 | 6,022 | 2,808 | 30,752 | 55,460 |
| Degree Completions | | | | | |
| High school/GED | 4,181 | 1,043 | 4,971 | 45 | 10,240 |
| Associate degrees | 3,200 | 1,364 | 311 | 10,579 | 15,454 |
| Baccalaureate degrees | 1,362 | 1,173 | 384 | 2,880 | 5,799 |
| Graduate degrees | 1,533 | 486 | 329 | 3,526 | 5,874 |
| Doctorate degrees | 0 | 0 | 12 | 19 | 31 |

Source: *DANTES Information Bulletin*, April 1990, Suppl.3.

FY 1989 data also indicate that DoD spent over $175 million dollars for voluntary education programs and services, down from $186 million in FY 1988 (See Table 11). The nearly 40,000 drop in graduate course enrollments within the Air Force accounts for much of the decrease in expenditures. Serious budgetary limitations in the late 1980s have resulted in the military services limiting course enrollments per servicemember, setting maximum limits on tuition assistance permitted per course, assigning low priority to voluntary graduate education, and questioning undergraduate degree programs that seemingly have no direct relationship to the servicemember's military job.

In the Army, voluntary education as provided through the Army Continuing Education System appears to be drawn under "Self Development," one of the three pillars of the Army's Leader Development Program, an effort approved by the Army Chief of Staff in 1988 (Vuono 1989). The voluntary nature of postsecondary programs and goals of college programs offered soldiers may increasingly reflect Army organizational objectives rather than the personal aspirations of soldiers for an education. The military services and the Office of the Secretary of Defense have the critical responsibility for defending the voluntary education budget during the budget reduction crisis of the 1990s. The worthiness of voluntary education, especially postsecondary programs, will be continously scrutinized by all concerned. A recent book, *Adult Higher Education and the Military: Blending Traditional and*

*Nontraditional Education,* sets forth the case for continuing in-service college programs for servicemembers (Anderson & Kime 1990).

**Table 11.—DoD voluntary education program Fiscal Years 1988 and 1989 expenditures, (in $ millions)**

| | Army | | Navy | | Marine Corps | | Air Force | | Total DoD | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1988 | 1989 | 1988 | 1989 | 1988 | 1989 | 1988 | 1989 | 1988 | 1989 |
| Personnel costs | 38.0 | 40.7 | 5.6 | 5.9 | .4 | .5 | 22.6 | 17.1 | 66.6 | 64.2 |
| Contract costs (Non-instructional) | 6.2 | 4.2 | 0 | 0 | 0 | 0 | .9 | .8 | 7.1 | 5.0 |
| Contract costs (Instructional) | 6.5 | 13.1 | 2.5 | 4.4 | 0 | .1 | 6.6 | .1 | 15.6 | 17.7 |
| Tuition assistance | 27.1 | 29.0 | 18.8 | 15.4 | 7.6 | 7.2 | 43.4 | 36.9 | 96.9 | 88.5 |
| Total | 77.8 | 87.0 | 26.9 | 25.7 | 8.0 | 7.8 | 73.5 | 54.9 | 186.2 | 175.4 |

Source: *DANTES Information Bulletins* April 1990, Suppl. 3; May 1989, Suppl. 4.

Among the 735 SOC colleges and universities, 97 percent award credit for the College Board's College-Level Examination Program (CLEP) Subject Examinations; 87 percent award credit for CLEP General Examinations and for DANTES Subject Standardized Tests (DSSTs); and 66 percent award credit for American College Testing Program Proficiency Examination Program (ACT/PEP). DANTES funds these testing programs within the military services. These tests are administered at testing sites located generally in base education centers by test control officers approved and trained by DANTES. During FY 1989, 95,690 CLEP, DSSTs, and ACT/PEP were administered within the military (See Table 12. ) This represents an 11 percent increase from similar data for FY 1988. More integration of credits based on nontraditional education such as those based on CLEP, DSSTs, and ACT/PEP testing into traditional degree programs is a major goal of DANTES. The adult higher education community that supports servicemembers appears to be accepting this challenge.

**Table 12.—DANTES testing funded in Fiscal Year 1989**

| | Army | Navy | Marine Corps | Air Force | Total DoD |
|---|---|---|---|---|---|
| CLEP general | 14,591 | 8,808 | 1,774 | 14,215 | 39,388 |
| CLEP subject | 9,321 | 4,778 | 563 | 15,484 | 30,146 |
| DSSTs | 9,942 | 2,515 | 368 | 10,846 | 23,671 |
| ACT PEP | 902 | 487 | 15 | 1,081 | 2,485 |
| Totals | 34,756 | 16,588 | 2,720 | 41,626 | 95,690 |

Source: *DANTES Information Bulletin* April 1990, Suppl.3

Among the 735 SOC institutions, 100 percent of them award credit based on recommendations contained in the American Council on Education's *Guide to the Evaluation of Educational Experiences in the Armed Services* (ACE *Guide*) regarding military service school courses (Servicemembers Opportunity Colleges 1990). In addition, 78 percent award credit based on recommendations contained in the ACE *Guide* regarding military occupational specialties, rates, and ratings. Based on over 70,000

SOCAD student agreements through FY 1989 (contracts for associate degrees), the mean numbers of credits applied to an associate degree are 3.71 semester hours based on military service schools and 10.38 semester hours based on military occupational specialties. In other words, approximately 14 semester hours out of a standard 60-semester-hour associate degree program are fulfilled by soldier-students through the award of credits recommended in the ACE *Guide*. These same SOCAD Student Agreements document that over 1 million semester hours of academic credit have been applied to associate degree plans for soldiers from 1978 through September 1989 (see Table 13).

**Table 13.—Nontraditional credit awarded by civilian colleges as documented on SOCAD student agreements, FY 78-FY 89)[1]**

| Credit source | Semester hours |
|---|---|
| Military service schools (ACE *Guide*) | 260,877 |
| MOS (ACE *Guide*) | 729,742 |
| CLEP | 69,300 |
| DSSTs | 18,547 |
| ACT/PEP & others | 8,350 |
| Total | 1,086,816 |

Source: *SOCAD Student Data Report*, 30 September 1989

[1]Based on 70,319 SOCAD student agreements.

Blending of academic credits based on nontraditional learning with traditional associate and bachelor's degree programs offered by regionally accredited civilian colleges and universities is a principal function of the SOCAD, SOCNAV, and BDFS networking systems. The Community College of the Air Force performs a similar function except the degrees are conferred by a military institution.

Limitations and issues regarding higher education in the military are numerous and complex. Anderson and Kime, in their book *Adult Higher Education in the Military: Blending Traditional and Nontraditional Education* (1990), discuss the following:

- Military/institutional relationships;
- Training versus education;
- Higher education and war-fighting capabilities;
- Use of education credentials;
- Promises and pitfalls of technology, and
- Quality education degree programs

Although all of these issues have a bearing on educational resources available for transition of servicemembers, this paper will review briefly a few limitations or issues that may adversely affect servicemembers in the transitioning process.

For example, postsecondary education in the military, like all voluntary education, is a command function and reflects the interest and priorities of the commander. The base education officers, specialists, and counselors belong to the local commands and respond to those installation, base, fleet, post, camp and community commanders. Although policy and fiscal guidance is given by OSD, the military services, and their major subordinate commands and the parameters of the voluntary education program are documented in a DoD directive, implemented in service regulations, and supplemented by directives

from major subordinate military commands, it is the local commander that staffs, funds, and operates the base education center and its programs and services. In the final analysis, it is the local commander and his/her education officer or specialist who determine the "how, what, how much, when, and who" regarding college programs, testing services, and education counseling made available to servicemembers. This decentralization of the education function causes considerable differences in the availability of programs and services and the capabilities of servicemembers to take advantage of what programs and services that are available. Some education-minded commanders will cause their education function to prosper by providing the necessary funding, personnel, and command support to ensure its success. They encourage servicemembers to participate in higher education programs as true adult learners striving to achieve their own aspirations. These commanders will not allow tuition assistance to be denied troops engaged in recognized college programs such as provided through SOCAD, SOCNAV, and BDFS and the CCAF. On the other hand, commanders who give less priority to education may divert monies sent to them for tuition assistance and education center operations to support military training, purchase military supplies and equipment, or even pave base roads, while their servicemembers are denied educational opportunities.

The quality and quantity of on-base education staff personnel vary widely. Career selection and management within the GS 1710 career field of Civil Service have their limitations and difficulties, factors are often reflected in the educational support available to servicemembers. Similarly the quality and availability of college advisors and faculty vary widely. The quality of on-base postsecondary programs continues to be a controversial issue, with the military relying principally on institutional integrity, civilian accrediting bodies, and state approving agencies for quality assurance (Anderson & Kime 1990).

In summary, in-service postsecondary programs are (a) command-driven, (b) not universally available, (c) unequal in quality, and (d) subject to funding and personnel deficiencies and limitations, at times critically severe. In general, however, the military and its supporting educational institutions have a distinguished record in providing postsecondary education opportunities for servicemember-students, even under the most trying circumstances. SOC and its networking systems, CCAF and DANTES have brought about, in both theory and practice, considerable commonality in college admissions, programming, transfer of credits, and acceptance of academic testing. The concept of blending nontraditional and traditional education has taken hold and is expanding in practice among colleges and universities. Higher education as made available within the military has contributed significantly to the larger adult and continuing education movement throughout the the United States. The part-time adult college student is becoming the norm, instead of the exception (Palmer 1990). As adult and continuing education grows and become more and more accepted in academe, its roots in the military should be recognized and appreciated.

## Transition Management Initiatives

Education for servicemembers preparing for the transition from active duty to civilian life has considerable historical precedent. Even during the rapid demobilization after World War II, USAFI and on-base education centers gave high priority to assisting servicemembers to obtain as much education as time and resources permitted to better equip them for the transition and to compete successfully in the civilian job market (Strehlow 1967). During the mid-1970s, as many of the Vietnam-era troops were reverting to civilian status, the military, by presidential order, instituted Project Transition to allow servicemembers to attend to school or civilian job training during their last 6 months of active duty, anticipating separation. Many servicemembers took the opportunity to ease their entry back to civilian life by working with prospective civilian employers such as Sears Roebuck, Montgomery Ward, General Electric, Ryder Trucking, and Volkswagen International. Staff positions were set aside for the operation of Project Transition. For example, at Fort Sheridan, Illinois (north of Chicago), the education services officer had a major, captain, a lieutenant, a GS-11, and a transition counselor on base to operate Project Transition.

In the mid-1980s the Army developed the Transition Management Program, pilot tested first at Fort Bragg. Funding for expansion to other Army installations was cut in March 1989. The education modules of transition management began as an initiative to encourage soldiers with Montgomery GI Bill benefits to apply to college prior to leaving active duty. It provided guidance and contractual monies to be used at installation Army education centers to support the transition management process. As funding for the Army Continuing Education System was reduced during the late 1980s, most installations could no longer afford contractual arrangements. Existing education center staff personnel were required to shoulder the load without contractual assistance. Education counselors provide the mandatory GI Bill briefing and conduct other education counseling as time permits. At least one installation has instituted a "College Resource Center" to supplement its education counseling efforts. This model provides a ready resource facility for soldiers and adult family members to explore on a self-help basis and find information about colleges and civilian jobs. Other base education center staffs have developed similar initiatives to provide the essential educational resources with minimum expense.

In 1990, OSD and the military services have task forces, committees, and offices dealing with transition assistance and the multitude of inherent issues and human needs. A special office has been established in the Office of the Assistant Secretary of Defense (OASD) to oversee military efforts. The military services are also in the process of establishing programs and offices. For example, the Army's program is called the Army Career and Alumni Program (ACAP). An office, headed by a GS-15, has been established as part of the Total Army Personnel Command. ACAP Memorandum of Instruction (MOI) sets forth numerous initiatives as part of ACAP (Budge, 1990). It attempts to (a) establish Army policy, (b) draw together existing Army transition assistance services such as education services provided through the Army Continuing Education System, (c) initiate some new services, and (d) plan future initiatives. Some staff personnel will be made available at installation level to serve as a focus for transition assistance available for "all the Army family." The MOI clearly states that services through ACAP are available not only to active duty soldiers, but also to reservists, Department of Army civilians, and family members. It states:

> Army headquarters is working with Congress, Department of Labor, Office of Personnel Management, state governments, and the private sector to bring together a comprehensive program for all transitioning personnel....Our ability to recruit and retain a force in the next 10 to 15 years will hinge on how well we take care of people during this period of great change. (Budge 1990, 2)

With regard to education resources, the "Existing Services Matrix" of the ACAP MOI shows that career counseling services through the Army Continuing Education System (ACES) provide clarification of career goals, interest inventories, academic and vocational guidance, non-traditional credit information, veterans educational benefits information, and college selection and application information.

It also indicates that ACES will provide college selection and application assistance, pre-discharge submission of veterans educational entitlement paperwork, and requests for AARTS records.

Army Regulation 621-5 (1989) sets forth current Army procedures for use within the Army Continuing Education System (see Table 14).

**Table 14.—U. S. Army transition counseling procedures for Army Continuing Education System**

C-1. Obtain a monthly loss roster (Reenlistment Eligibility Roster) from the installation Total Army Career Counselor (TACC) or PSC. (Roster lists soldiers scheduled to complete active duty within 270 days.)

C-2. Using the loss roster as the source document, notify the battalion-level (or separate company) commander of soldiers requiring mandatory Veteran's Educational Assistance Benefits Counseling.

C-3. Conduct Veteran's Educational Benefits counseling with soldier (and spouse, if applicable), no later than 150 days prior to the soldier's transition date. Schedule a follow-up counseling session for soldiers who plan to pursue full-time or part-time education and need further assistance.

C-4. Conduct follow-up counseling. Schedule testing appropriate to the soldier's education/career plans . . .

C-5. Assist soldier in identification of educational institutions consistent with the soldier's abilities, interests, and career plans.

C-6. Assemble information on identified educational institutions.

C-7. Assist soldier in requesting official transcripts, test scores, and other education/training documentation.

C-8. Assist soldier in obtaining and completing educational institution admissions-related forms.

C-9. Obtain an updated copy of the soldier's SOCAD/BDFS agreement, if applicable.

C-10. Assist soldier in assembly of admissions packet for each educational institution which requires formal application. The packet includes an ESO (base education services officer) letter of introduction.

C-11. OCONUS (Outside Continental U.S.) only: Assemble "Green to Gold" packet for each soldier eligible for, and interested in Army ROTC enrollment . . .

C-12. Forward original packet(s) to educational institution(s) admissions offices/registrars.

C-13. OCONUS only: Forward original "Green to Gold" packet to Professor of Military Science (PMS) of the soldier's denial or packet shortcoming.

C-14. Assist in correction of the packet and resubmission, or counsel soldier on educational alternatives, if the soldier is notified by an educational institution of admission denial or packet shortcoming.

C-15. During installation clearance processing, verify completion of mandatory Veterans' Educational Assistance Benefits Counseling (using DA Form 669).

C-16. Prior to final AEC (Army Education Center) clearance, provide transitioning soldier with AARTS transition transcript and other personal transcripts and documents from DA Form 669 (if materials not previously provided to soldier). DA Form 669 will be hand carried by soldier to the transition point activity.

Source: *Army Regulation 621-5* 1989, 12

The Department of Labor Transition Assistance Program (TAP) is included under ACAP's new initiatives. TAP consists of a series of 3-day seminars taught by Department of Labor personnel to separating personnel. These seminars focus on personal appraisal, career decisions, job applications, and dressing for success. Similar to job fairs, TAP seminars can point servicemembers toward specific job opportunities or into areas for further exploration. Specific jobs may well require some postsecondary

education or associate or bachelor's degree recipients may have a competitive edge in acquiring certain jobs.

Future Initiatives listed by ACAP MOI include (a) funding for ACAP Transition Centers (for pilot testing at Fort Myer, VA; Fort Knox, KY; Fort Carson, CO; Fort Polk, LA; St. Louis Area Support Center, Granite City, IL; Hanau Community, Germany; and Yongsan, Korea) , (b) contracted staffing for Job Assistance Centers at designated installations, (c) development of state-local government placement agreements to provide job search skills training, skill retraining, and job placement, (d) expansion of the Office of Personnel Management Displaced Employee Program, and (e) development of a comprehensive guide to transition services. The future initiative listed in the ACAP that is directly related to higher education is "New Careers in Teaching." This initiative will attempt to identify military and civilian personnel who have the skill, qualifications, and desire to teach in the nation's schools and assist them in meeting state certification requirements. Army education centers will maintain information on certification requirements, availability of college courses that will assist in meeting certification requirements and addresses for state education agencies. Model alternative teacher certification programs are being pilot tested at Forts Bragg, Gordon, and Myer.

The FY 1991 National Defense Authorization Act spells out the congressional mandate regarding Transition Assistance. In addition to the congressional guidance, ACAP and the transition initiatives outlined above are detailed in the *Army Veterans Education Guide*: *A Guide to Education and Career Opportunities for Today's Army Veteran*, compiled, published, and distributed by School Guide Publications, 210 North Avenue, New Rochelle, NY 10801. School Guide Publications, with the cooperation of the Education Division at Headquarters Department of the Army, has developed and published a guide targeted to soldiers and Army veterans annually since 1988 at no expense to the military. Cost are covered by advertising, primarily from colleges, arranged by School Guide Publications. The preprinted postage-free reply cards included in the *Army Veterans Education Guide* are handy for soldiers and veterans to send for admissions information either to the "Army Veterans Education Guide" or to any one of the institutions or companies advertised in the *Guide*. The *Army Veterans Education Guide* carries articles by such people as the Colonel Gene Bruce, Director of the Army Continuing Education System; Ron Atwell, Vice President of the National Association of the Veteran Programs Administrators; Dr. Dennis R. Wyant, Director, Vocational Rehabilitation and Education Service, Department of Veterans Affairs; Dr. Steve F. Kime, Director, Servicemembers Opportunity Colleges; Joan Schwartz, Director of Registries, American Council on Education; Rosana M. Nelson, President of the National Association of Veterans Upward Bound Project Personnel; Dr. Paul Gulyas, President of the National Association of State Approving Agencies; and selected veterans advisers and coordinators. Considerable relevant and timely information is contained in this commercially developed *Army Veterans Education Guide* for ready use by any soldier or veteran seeking participation in higher education programs.

## The Role of the Department of Veterans Affairs (DVA) and Veterans Coordinators and Advisors

Having to this point concentrated on educational resources available through the military, this paper will now look briefly at education resources provided though the Department of Veterans Affairs and colleges and universities. As indicated earlier, DVA administers a number of education assistance programs. The DVA maintains field stations and regional offices to manage these programs and provide assistance. The state DVA field offices have toll-free telephone service for individuals requesting information and assistance. The DVA advises individuals to make use of these services. (Wyant 1990, 17) The DVA also prepares and distributes brochures regarding the various education assistance programs (e.g., Chapter 30, Chapter 106, et al.) These are often used in the mandatory pre-separation counseling regarding education benefits by in-service education personnel.

In order for servicemembers and veterans to receive educational benefits from DVA, education and training programs must receive approval from a State Approving Agency (SAA). At least one SAA is

located in each state, the District of Columbia and Puerto Rico. If any doubt exists regarding whether a specific program is approved for DVA benefits, the state SAA is available to answer questions about program approval.

Every college or university authorized to educate or train veterans has a veterans certifying official. This individual is responsible for reporting enrollment status to the DVA. Many institutions have an office of veterans affairs with a coordinator and counselors or advisors. A student enrolled at a specific institution who desires to use his/her education benefits through DVA should locate and visit that office on a high priority basis. College catalogues generally contain information regarding veterans affairs and how to gain further information on use of GI educational benefits (Rowland 1990).

The DVA has experienced some problems in accomplishing its massive administrative mission. Ronald H. Atwell, Vice President of the National Association of the Veteran Programs Administrators, has classified these problems into four basic categories:

> Timeliness of claims processing; the accuracy of the awards (of educational benefits); the problems associated with communication between the veterans, and the school, with the (DVA regional ) centers; and finally, the Department of Veterans Affairs and the Department of Defense communication and coordination. (Atwell 1990, 2)

Atwell believes that the military services should be required to document counseling for servicemembers who are separating. He wants the documentation to specifically include a statement indicating that the eligibility status for veterans education benefits was discussed and that the member is aware of his or her eligibility. Atwell is aware of cases in which the servicemember was separated early and, as a result, lost eligibility for benefits. Furthermore, he found evidence to suggest that the veteran did not realize that early separation would cause the loss of eligibility for benefits (Atwell 1990, 7-8).

Perhaps the most significant problem is not DVA's administration of the education benefits program, but lack of use by veterans. Since the implementation of the Montgomery GI Bill, over 80 percent of those active duty servicemembers eligible to join have done so by having $1,200 deducted from their pay ($100 per month for the first 12 months on active duty). This money is non-refundable to the servicemember or veteran. It must be used in terms of educational benefits.

Although it is too early for a full determination, preliminary data show that most returning veterans are *note* taking advantage of their educational benefits by going to college. Hassles in obtaining eligibility certification and the time-lags in receiving payments, especially the first payment, contribute to personal decisions not to go to college. As shown in the composition of the military, most servicemembers have family responsibilities. High percentages are male and minorities. Although most are college-capable, many do not have fiscal resources or the personal priority for education achievement needed to move from active military duty to full-time college without considerable personal and family sacrifice. Positive experiences with in-service education programs may have helped some of them decide to go on with their college pursuits on either a full- or a part-time basis. But when faced with career disruption and separation from the military and perhaps family financial hardships, returning veterans need a strong advocate for postsecondary education to help them plan the achievement of educational goals needed for entry into new civilian careers and for potential advancement within those careers. Knowledgeable people involved in helping veterans with their educational pursuits, such as Ron Atwell, question whether the DVA is "an advocate for the veteran" or a mere "administrator" for the education benefits program (Atwell 1990, 5). Fiscal and personnel constraints and limitations, complexities in benefits programs, fear of fraud, communications difficulties, the massive bureaucratic administrative requirements inherent in the various programs, and perhaps even Congressional micro-guidance and oversight contribute to DVA's problems both in image and ability to accomplish its mission. Nevertheless, DVA's role is substantial. Veterans need an effective advocate, especially in the area of education and use of benefits.

## Possible Approaches to Education Transition Assistance

One approach to energizing education transition assistance is for the Department of Veterans Affairs to assume an active advocacy role for servicemembers/veterans in using their educational benefits. For example, DVA could head an interagency task force composed of OSD, the military services, federal and state education offices, and education associations, and institutional representatives targeted toward development and implementation of initiatives encouraging servicemembers and veterans to go to college by using their GI Bill benefits. DVA could conduct workshops with veterans coordinators, counselors, and advisers, concentrating not just on administrative procedures but on also ways to better satisfy veterans' human needs through higher education. DVA could arrange for a vigorous outreach to veterans and their adult family members while in the process of separating from the military and build on the mandatory pre-separation briefing given by in-service education personnel. DVA could arrange for networks of colleges and universities, such as currently developed by SOC, that (a) "contract for degrees" by conducting official evaluations of prior learning and providing the veteran-student with a guaranteed academic plan for degree completion; (b) recognize and award academic credits for relevant learning that occurred during formal training at military service schools and through on-the-job military experience; (c) award credit and accept in transfer credits based on nationally recognized standardized testing such as CLEP, ACT/PEP and DANTES DSSTs; (d) provide readily available academic counseling; (e) follow a liberal policy regarding the transfer of academic credits; and (f) limit institutional residency requirements. DVA could expand their work with national education associations by providing speakers and exhibits at their annual conferences for the purpose of explaining veterans educational benefits and encouraging both public and private colleges and universities to conduct their own outreach to veterans with the active assistance of DVA. In other words, this approach would make DVA the primary national agency encouraging use and planning, coordinating and implementing actions proactively on behalf of veterans as well as bureaucratically administering veterans education assistance.

A second approach is for DoD to assume the lead role in "encouraging" (nearly to the point of requiring) every transitioning servicemember to (a) set realistic education goals for himself or herself; (b) document those goals by establishing an individual educational plan (preferably a student agreement or contract with inherent guarantees); (c) where possible, actually begin a postsecondary education program on active duty that is transferrable to a college the veteran will attend after separating from the military; (d) arrange, with the help of in-service education staff, for admission to the college the veteran has chosen to attend after separation; and (e) begin use of DVA educational benefits while on active duty by clearly establishing eligibility for benefits, activating an individual DVA account, and drawing on that account during the last 6 months of active duty. Such an account could continue or be easily transferred as the student changes from active duty to veteran status, with payments continuing uninterrupted. DoD would provide for sufficient educational counselors and/or monies for contractual services so that installations could provide the necessary counseling, testing, programming, and administrative services. (*The General Accounting Office and Defense auditors would need to be energized to ensure that these manpower positions and funds are, in fact, used for education transition assistance, and not ripped off in the military chain of command for other purposes.*) OSD could arrange for networks of colleges and universities, perhaps a follow-on to those already developed by SOC, using the criteria outlined in the DVA approach, above. The ACAP philosophy that the "military must take care of its own" could be used to justify DoD advocating this approach. The capability to recruit, train, retain, and, as necessary, mobilize well-qualified servicemembers in sufficient numbers to meet national contingencies surely justifies the effort needed to care for the educational needs of servicemembers and veterans.

A third approach is for DoD and DVA to jointly coordinate a major effort to energize education transition assistance. A task force headed jointly by OSD and DVA, with other appropriate participants, could be targeted toward development and implementation of initiatives encouraging servicemembers and veterans to go to college by using their GI Bill benefits. DoD could strongly *encourage* every transitioning servicemember to undertake all the actions outlined in the second approach. Networks of colleges could be established using the SOC model. A "transition guide" for use by both in-service education staff and post-service veterans coordinators, counselors, and advisors could be jointly

sponsored by OSD and DVA and developed and fielded in an expeditious manner. DoD and DVA could conduct joint workshops with in-service education personnel, supporting academics, and veterans coordinators, counselors, and advisors, concentrating not just on administrative procedures but also on specific ways to better satisfy human needs of servicemember-veterans through higher education. Both the military services and DVA could arrange for a vigorous, coordinated outreach to servicemember/veterans and their adult family members in the process of separating from the military and build on the mandatory pre-separation briefing given by in-service education personnel. Both DoD and DVA would need to program and budget the necessary personnel and funding resources to mount and sustain such an education transition assistance effort. The higher education community, including the national education associations and colleges and universities, would need to work cooperatively with DoD and DVA to make such an effort fruitful. Both the administration and the Congress must recognize and fully understand the need for such an effort by providing priority support for its accomplishment.

Servicemembers Opportunity Colleges, if appropriately sponsored, have the capability of extending the SOC model to meet some of the major transitioning needs. *SOC Principles and Criteria* currently address veterans, but no organized outreach program or concrete, enforceable requirements currently exist. For example, SOC could establish a consortium of "SOC transition colleges." These post-secondary institutions would be those willing to take steps to make the new veteran's college admissions and enrollment easier, at the same time crediting nontraditional learning based on military schooling and experience. In creating of a consortium of transition colleges SOC would be required to:

- Establish application procedures, standards, and criteria for membership aimed specifically at the problems of transition;
- Extract, in applications for membership to the consortium, promises of preferred treatment in admissions, quick recognition of military schooling and experience for credit, liberal acceptance of academic testing, transfer of coursework already completed, etc.; and
- Collect information relevant to the veteran, such as points of contact, admissions procedures and policies, special provisions for veterans, telephone numbers, and addresses.

A SOC transition guide could be produced for use both in-service and post-service. This instrument, and possibly accompanying brochures, would assist counselors and provide specific guidance to existing servicemembers. In producing such a guide, SOC could:

- Outline what SOC transition colleges generally can do for servicemembers/veterans;
- Explain specifically how each SOC transition college serves veterans, summarizing specific policies regarding veterans' admission, award of credits based on non-traditional learning, etc.;
- Demonstrate the importance of documenting military schooling and experience and show how credits awarded based on nontraditional education are blended into degree programs;
- Include instructions on how servicemembers, veterans, education counselors and veterans coordinators and advisors can use the SOC transition guide; and
- Provide for periodic updating to maintain current information in the guide.

Liaison would be maintained with the academic community to ensure that new veterans receive the treatment and care promised. SOC could be required to:

- Seek new colleges that will dedicate themselves to serving veterans;
- Monitor the performance of member colleges and produce reports to sponsoring agency as requested;
- Promote acceptance of transition efforts through the academic associations that sponsor SOC;
- Serve as a troubleshooter for servicemembers/veterans, counselors, and administrators; and
- Conduct workshops to instruct college personnel and/or military counselors.

Such a SOC transition program would in effect be a veterans outreach effort connecting in-service with post-service educational opportunities. The SOC model currently in operation has contributed significantly to the successful blending of non-traditional education with traditional associate and bachelor's degree programs. Guarantees in the transferability of credits, once thought impossible, are now commonplace among institutions within SOC network systems. The strengthening of the SOC model by the inclusion of a transition/veterans program would have a positive impact on SOC in general and all of its programs and services.

# Issues

There are numerous issues that affect education transition assistance. Some of the limitations and issues regarding in-service postsecondary education have already been covered. This section will concentrate on five issues that seem to have some overiding considerations when one approaches the subject.

## 1. Resourcing Education Transition Assistance

This paper has outlined, in some detail, in-service education resources that may be applied to assisting servicemembers and their adult family members who separate from the military to continue their post-secondary pursuits and qualify for entry into the civilian job market, or at least become competitive in seeking civilian employment. For example, the U. S. Army Transition Counseling Procedures (as outlined in Table 14) look ideal on paper in AR 621-5. But at an Army installation with 37,000 troops and thousands more adult family members but only 12 education counselors and no monies for contractual education transition assistance and support services, these procedures must appear as ridiculous rhetoric. If education transition assistance is to occur in practice, trained professionals on the job are critical. Qualified education services officers and specialists are needed for leadership and supervision, but it is the dedicated, trained counselors or academic advisors who are worth their weight in pure gold. They can be permanent government employees or providers of services by contract but without them, transition assistance is only paper shuffling and lip-service. Contractual support services and colleges that support the servicemembers and veterans can fill minor gaps but they can not replace in-service education counselors.

## 2. In-Service Education Resources Support for Military Training and Military Job Performance

Resourcing of education transition assistance is intertwined with divergent schools of thought on how in-service education funding and personnel resources should be used. Throughout the long history of adult and continuing education in the military, a continuous battle has been waged for the "soul" of the voluntary education program and, consequently, its resources. Should education focus on human development and personal aspirations for education or on repairing military training and job performance deficiencies? In other words, should in-service education resources be strictly applied only to education programs and services that can demonstrate a direct relationship to a military organizational requirement (preferably in military training and performance readiness arenas) or should in-service education resources support the servicemember in his or her quest for an education? Traditionally, education resources in the military have been used for a balanced mixture of purposes (i.e., support for recruiting, retention, and other military personnel management objectives; a supplement to military training; and support of quality of life and human resource development goals ). When this balance is broken, in-service education suffers. Operations-minded military commanders resent and often resist using critically short dollars and staff to support the transition of servicemembers back to civilian life. They may not, in fact, consider this an essential part of their military mission. Hence, monies and manpower positions designated for implementation of an education transition assistance program must be clearly

identified and protected throughout the resource management chain within the military services, with appropriate audits to ensure operational compliance.

## 3. Education as Solely a Civilian Sector Responsibility

In some ways the military would like to assume the role of an unenlightened employer who chooses and retains only those employees capable of doing the job. As an employer, the military would be free to set stringent criteria for promotion and re-enlistment, with the full expectations that its employees would meet those requirements on their own (i.e., with little or no effort on the part of the employer). Some argue that education is not the responsibility of the military but instead belongs to the states and localities in which servicemembers are stationed. They contend that servicemembers and their family members should be counted along with other residents of those communities. Except in overseas commands, their education needs should be reflected in state education plans, with the federal government providing assistance to the states to ensure military employees have access to needed educational programs and services. In some respects, this philosophy has been partially put into practice. For example, most states give in-state tuition rates for state and community colleges to all servicemembers stationed in that state regardless as their home of record. Some states also extend this benefit to adult family members stationed in those states. The State of North Carolina has traditionally included soldiers and their family members at Fort Bragg in its state education plan. The Fort Bragg education program has benefited greatly over the years because of the planning and close working relationships forged between the military and the state and local education authorities. At other locations attempts at similar efforts have failed. To their credit, however, military leadership generally has taken the position that it must "care for its own" and not rely solely on outside agencies to provide education programs and services. Consequently, the military has allocated considerable personnel and fiscal resources to in-service education, as previously shown in this paper.

## 4. Use of Educational Incentives in Military Recruitment

Education incentives have been used successfully since 1980 to attract sufficient numbers of "high quality" recruits into the military services. The Department of Veterans Affairs has responsibility for administering these programs. Nevertheless, the military services, as responsible employers, have a stake in ensuring that educational opportunities promised through programs like the GI Bill are obtainable by servicemembers and veterans. Just what is that stake and what measures should DoD take to "care for their own"? Many servicemembers, along with their parents and families, believe that the military will help them achieve their educational goals and mature into responsible citizens. This is particularly true among minorities. But often they find either that in-service education opportunities are limited by a lack of suitable education programs and services or that military duty requirements limit potential participation in such programs. Career-minded servicemembers have often placed their military duty performance above participation in college programs. If involved in a RIF action, these servicemembers may feel cheated educationally. In the transitioning process, a strong advocate for veterans' education must assert itself to ensure follow-through on recruitment promises and servicemembers' expectations. Without such an advocate, the forces of inertia may prevail. On occasion, however, the military has been accused of "puffery" in its recruitment promises. DVA has been accused of not being an "advocate for the veteran." The bureaucrats within the military and DVA may even hope that servicemembers and veterans do not use their in-service education opportunities or their education entitlements so they can use that funding for other purposes. Ethically, however, it seems that both the military and DVA have education obligations to fulfill. Their performance in fulfilling those obligations should be closely monitored.

## 5. Fair Treatment of Servicemembers Involved in a Reduction-In-Force

What constitutes fair treatment of career-minded servicemembers being involuntarily separated from the military through no fault of their own? What would cause them to feel that their nation is "grateful" for their service and dedication? These are questions posed by the nation's leadership whether in

Congress, in the Bush administration, or DoD. Yet budgetary constraints are real and place limits on how personnel involved in RIF actions are compensated. Follow-through on postsecondary education opportunities seems to warrant high priority in any transition assistance program. Yet personal and family considerations must be resolved so that veterans can realistically be expected to go to college either part-time or full-time. The reputation of DVA in administrating the educational assistance programs can be a factor in a veteran deciding if he or she can participate in a college program. Pre-separation counseling and readily available assistance through DVA and at colleges and universities can help. Perhaps a key to the question of "fair treatment" is the perception that people in the military, in DVA, in Congress, and in the colleges do, in fact, really care about servicemembers in transition and that they are striving for their best treatment possible. Keep in mind that career-minded servicemembers often place high value on being recognized for jobs well done. A viable education assistance program can serve as a reward for their past efforts as well as help them prepare for new careers.

## Conclusions

Thousands of servicemembers transition out of the military each year. Those career-minded soldiers, sailors, marines, and airmen separated involuntarily through reduction-in-force actions call for some additional transition assistance considerations in a build-down of U.S. military forces. A high percentage of these individuals are college-capable. Many are minorities. Most enlisted personnel do not have college degrees.

Build-down scenarios vary greatly. In the optimal build-down, normal attritions would dominate and reduction-in-force actions would be minimal. However, budgetary constraints may demand deeper cuts, causing substantial reductions-in-force.

DoD has a substantial voluntary education program available in all its military services, at a cost of $175 million in the 1989 DoD budget. Over 523,000 individual enrollments in undergraduate courses occurred during that fiscal year.

The Tuition Assistance Program within DoD and educational incentives programs administered by DVA provide the necessary fiscal resources for individuals to go to college. On-base education center staff and supporting colleges and universities provide postsecondary education programs and services. SOC, CCAF, and DANTES assist in blending nontraditional and traditional education into degree programs achievable by servicemembers and veterans. These degrees are recognized not only in the military but also in the civilian sector and by the higher education community.

Over 700 colleges and universities have dedicated themselves to support servicemembers and veterans by subscribing to *SOC Principles and Criteria*. These institutions follow liberal transfer-of-credit policies, limit institutional residency, award credit based on learning achieved through military service schools and on-the-job experience, and award credit based on at least one nationally recognized academic testing system.

Education and training assistance has traditionally been provided servicemembers undergoing demobilization and RIF as possible under prevailing circumstances. The Army had a transition management program (never fully implemented) in the mid-1980s and has the newly instituted Army Career and Alumni Program (ACAP). Army transition counseling procedures are outlined in detail in Army Regulation 621-5. Education transition assistance is being conducted by various means in local Army education centers. Other services also have initiatives in education transition assistance. Mandatory pre-separation counseling occurs in all services.

The Department of Veterans Affairs has a critical role in administering educational assistance programs. Veteran coordinators and advisers at colleges and universities with DVA-approved educational programs are valuable resources for the transitioning veteran.

Preliminary data indicate that most eligible servicemembers returning to civilian life are not going to college and using their Montgomery GI Bill entitlements. A strong advocate for postsecondary education is needed to encourage veterans to go to college and use their educational benefits.

Several possible approaches can be taken to energize education transition assistance. One is for DVA to assume an advocacy role for veterans by taking necessary actions needed to promote college participation among veterans and develop an environment that encourages returning veterans to attend school. A second approach is for DoD to assume that primary advocacy role. The third is for DVA and DoD to jointly head a national task force to develop and implement initiatives that coordinate education transition assistance and promote a highly positive environment encouraging veterans to participate in college and complete their degree programs while beginning productive careers in their civilian lives.

Issues that influence education transition assistance are complex and intertwined. For example, sufficient numbers of well-qualified education counselors providing transition counseling are absolutely essential to accomplish the mission. But in times of severe budget constraints, questions arise regarding use of in-service education resources and whether it is appropriate to use those resources for servicemembers leaving the service. Perhaps these scarce funds should be used only to support military training and military job performance. Perhaps adult and continuing education could be left up to the states and localities where veterans will go once they leave the military. Many servicemembers came into the military based on promises that the military would facilitate their opportunities for education and training. What ethical and moral considerations compel the military and the federal government in general to fulfill military recruitment promises and servicemember expectations raised by those promises? Finally what constitutes "fair treatment" regarding the education of servicemembers involved in a reduction-in-force?

## Recommendations

1. *Establish a task force jointly headed by DoD and DVA to develop and implement initiatives that coordinate education transition assistance and promote a highly positive environment encouraging veterans to participate in college and complete their degree programs while beginning their careers as civilians.*
2. *Plan and budget for the necessary education transition services needed for in-service implementation.* OSD should take the lead on this. Military commanders should be made fully aware that education transition assistance for departing servicemembers is a highly visible part of the military mission of each service. DVA should take similar actions for post-service implementation. Congress, with the help of the higher education community, needs to support these budget requests and demand implementation of services. The General Accounting Office and the DoD auditing services should ensure compliance.
3. *Establish a consortium of "SOC transition colleges," sponsored by DoD, DVA, and higher education associations.* SOC should develop a transition guide as part of its efforts to assist counselors and to extend the SOC model to veterans.
4. *Ensure that DoD, DVA, and supporting colleges and universities provide a caring attitude for servicemembers returning to civilian life by actively reaching out to them within their spheres of influence and offering them assistance, however limited by fiscal and personnel deficiencies.*

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# The Use of NOCTI Examinations to Assist Military Personnel Moving into the Civilian Work Force

Scott D. Whitener

## Overview

With the anticipated sizable reduction in our military forces, there needs to be an efficient means to matriculate trained military personnel into the civilian work force. This process can not merely focus on directing these individuals toward low-level, low-paying jobs but must recognize and document the skills and knowledge they have acquired so that they may assume positions which acknowledge and reward their expertise. Even if further training is required to assume a specific civilian job, an assessment vehicle must be provided which determines what specific additional training is required rather than assuming that the skills and knowledge base obtained through the military do not exist.

Currently the United States faces a shortage of technically trained people. Many of the jobs in the military sector involve extensive technical training. Further, a substantial portion of the military jobs closely parallel civilian counterparts. For example, the technical fields of electronics, heavy equipment, automotive service, maintenance, machine tool, and so on have like skills whether applied in the military or in a civilian situation.

The problem is how to document the skills and knowledge people have acquired in the military so that they may show documented evidence of their skills to a potential employer or to an educational agency, in the event they need further specific training to become civilian job-ready. The answer is the use of nationally standardized occupational competency examinations prepared and administered through the National Occupational Competency Testing Institute (NOCTI).

NOCTI has a battery of over 130 nationally standardized two-part written/performance occupational competency examinations covering almost all technical fields. These tests are available at two levels, the job-ready level and the journeying level. Over 100 colleges and universities nationwide grant credit for NOCTI exam results. Each test taker receives a diagnostic printout dipicting his or her occupational skills. This printout is used as a credential that the test taker can provide to the potential employer which presents evidence of demonstrated skills.

Armed with NOCTI test results, those leaving the military would have in their possession a credential demonstrating their skills so that they could move more directly into a civilian technical job. If more training were required for civilian employment, the test results would point specifically to the areas of training required for job readiness. Those military personnel with like deficiencies could take part in group classes specifically designed to equip them with the skills they needed to make the transition into

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a civilian technical job. For those wishing to seek higher education, the NOCTI exam results can be equated to university credit toward a degree.

NOCTI exams could be administered to military personnel through one of more than 60 NOCTI test centers nationally. Sites could also be established at designated military or governmental sites throughout the world. NOCTI provides all of the necessary materials as well as examiner training.

This paper presents a conceptual model for using NOCTI examinations to help military personnel move into the civilian workforce. Ten specific Military Occupational Specialities (MOS) are identified for which there are existing NOCTI Occupational Competency examinations. In the selection of these examples an attempt was made to identify occupations which represent a sizable segment of jobs in the military.

Also discussed in this paper is the training that the military provides to prepare enlisted personnel for occupational specialities. Corresponding educational competencies and programs are examined, as are types of educational institutions which provide them. Finally, implications of national, state, and local licensing and certification are discussed.

We simply must provide a means by which our military personnel may move into the civilian labor force with their skills acknowledged. This paper examines how NOCTI occupational competency exams provide an accurate, efficient high-caliber, and inexpensive way to accomplish this essential task.

## About NOCTI

NOCTI was established in 1969 at Rutgers University, under an Office of Education, U.S. Department of Health, Education, and Welfare grant, to facilitate the development of a national consortium of states and territories that would initiate high-quality journeyman teacher occupational competency examinations (TOCTs). Incorporated in 1973, NOCTI implemented job-ready occupational achievement tests (SOCATs) in 1978 for student program completers. In 1985, NOCTI organized its Industrial Occupational Competency Testing (IOCT) program in response to growing private sector interest and support for procedures (1) to select new-hire employees and/or trainees and (2) to evaluate employees at progressive levels of competency in given technical areas and assignments. Today, from its Michigan headquarters at Ferris State University, NOCTI coordinates the largest network of occupational/technical assessment services in the nation, serving business, education, and government through an organization of over 60 area test centers serving 47 states and two U.S. territories.

As the nation's largest provider of occupational/technical assessments, NOCTI operates data-proven and comprehensive testing services (normed or criterion-referenced), state-of-the-art computer scoring services, job and task analysis workshops, and national/international consulting services. Recent contracts include Toyota USA, Nissan USA, Buick Oldsmobile Cadillac Division of General Motors, Nabisco, Central Oil Coal, the U.S. Department of Labor, the states of Pennsylvania and Connecticut, General Electric/Jamaica, and activities with over 700 schools and local school districts. NOCTI's current item bank inventory represents a vast array of technical skill areas in over 50 occupations ranging from accounting/bookkeeping to marketing and distribution to warehousing.

The NOCTI teacher testing division currently provides state certification examinations to over 25 state departments of education. In addition to the certification considerations, NOCTI teacher tests may provide test candidates with college credits at over 100 colleges and universities across the country. In the ongoing assessment development project with Nissan Motors, NOCTI is playing an essential role in the Infinite Certification Program. The Volkswagen Salesperson Certification Assessment project provided Volkswagen with several forms of competency assessments (industry-specific) for current and/or potential sales personnel and floor managers. A 2-year U.S. Department of Labor contract entitled "Robotic Technician High Technology In-plant Training Model" provided the Department with a model

curriculum and assessment process in order for companies, institutions, and/or organizations to develop training and certification programs for the "robotic technician." Other contracted activities include working with companies such as Subaru-Isuzu, General Electric, Houston Metro Transit Authority, National Tooling & Machining, and Cummings Engine Corporation. The NOCTI client list demonstrates the interest in, and demand for, quality assessment vehicles by which individuals can be evaluated as to competency/performance and recognized for appropriate achievement.

The National Occupational Competency Testing Institute is a not-for-profit organization composed of a national consortium of states and governed by an elected board of trustees. NOCTI is dedicated to developing and/or providing high-quality, industry-relevant competency assessment and evaluation designs and believes they are central to improving the quality of the work force, productivity, and professional certification programs.

Thus far, 69 SOCAT (job-ready level/entry level) and 61 TOCT (journeyman level) occupational competency examinations have been developed, validated, and made available for national use. The examination for each occupation contains two parts: a written test covering the theoretical concepts of the occupation and a performance test that examines selected manipulative skills of the occupation.

The primary purpose of the NOCTI examinations is to determine an individual's level of occupational competence. The tests are not designed to measure teaching or instructional skills. Rather, they focus on the technical knowledge, psychomotor skills, understanding, and analytical abilities normally required of an individual for successful practice of the occupation.

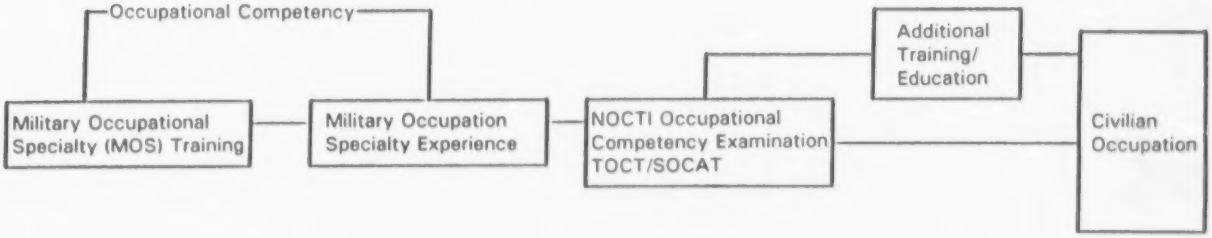
The content of each of the NOCTI teacher examinations has been derived through careful occupational analysis involving committees of experienced individuals from each specific occupation. The selection of the special areas to be tested within occupations and the actual construction of test questions has been based upon committee judgments relating to the frequency of the item's use and its significance in the real workplace. All examinations were field tested on appropriate populations (journeymen for the TOCTs and technical program completers for the SOCATs) and item analyses were performed. Modifications in each test were made based on the item analyses, and instruments were again subjected to field tests to determine reliability (internal consistency) as well as to develop a set of norms. Readability analysis was performed on each written test to ensure the reading level matched that required at the appropriate level in the occupation.

The NOCTI teacher tests have been standardized by administering them to populations of mature workers from specific crafts in the field. SOCATs have been administered throughout the country at the secondary and postsecondary levels. The research completed shows that the tests in this series have high reliability with low standard errors of measurements. The tests have been constructed to provide subscores for selected categories within the occupations. This makes it possible for an individual to identify specific areas of an occupation where he/she may excel as well as possible areas of weakness. This is especially valuable when a college or university contemplates granting college credit to an individual upon the basis of demonstrated strengths in very discrete occupational specialties. Thorough information regarding competency is also essential to employers as they seek specific job skills from a potential employee.

Annually, as part of the internal quality control process of NOCTI, item analyses and reliability measures are run. These accumulated data have demonstrated the time stability of the measures. For TOCT, the population tested consists principally of persons from the trade who have met the minimum occupational experience requirements for teaching in their respective states. For SOCAT, the population tested consists for the most part of secondary and postsecondary vocational/technical program completers, with the data base held separate for each level. Mean scores tend to show small variations from year to year, providing additional evidence that TOCT measures reflect journeyman achievement and SOCAT measures reflect job-ready/entry level achievement. Also, institutions, states, businesses, and industries that have used these tools are satisfied with the results.

It is the policy of NOCTI to continue to develop occupational competency measures in accordance with resources available and in line with the standards for educational and psychological tests. In this regard, all tests and support materials are periodically reviewed and revised as needed. In addition, studies are continuously underway with a number of states to expand the test titles available through the NOCTI national program.

**Figure 1.—Conceptual model of progress from MOS training to civilian occupation via NOCTI testing**




# A Model of NOCTI Application to the Transition Process

Figure 1 is a simple conceptual model illustrating how NOCTI examinations could be used to determine whether military personnel possess the skills necessary for employment in a civilian occupational similar to their military occupation or if further training/education is necessary for occupational competency. Full appreciation of the model requires examination of each of its components in greater detail.

## Occupational Competency

It is essential to take a holistic approach as we attempt to examine the occupational competency of military personnel or any person functioning in an occupational field. Occupational competency is an outcome of two very important components: training/education and experience. Simply attempting to assess the content of the training/education an individual has received is not enough. Many new skills are learned through experience, while existing skills are refined or expanded. For example, experience often yields greater speed. With speed comes better productivity, which is essential to the very survival of America's business and industry. In assessing occupational competency today it is therefore crucial that individuals be given the opportunity not only to show what they know or what they have done, but also to demonstrate their acquired manipulative skills.

Occupational speciality training in the military in many cases is very similar to occupational training in a like civilian field. For example, automotive service training whether in the military or not encompasses working on the same types of vehicles and therefore requires the same skills. Likewise, the experience and skill-refining which takes place in the military is equally valuable in the civilian sector.

## NOCTI Occupational Competency Examinations

Our conceptual model calls for an individual exiting the military to take an appropriate NOCTI occupational competency examination. In this context, appropriate means an exam title that parallels the individual's military occupational speciality (MOS) and reflects his or her probable skill level. A list of NOCTI TOCTs is provided in Appendix A and SOCATs in Appendix B.

NOCTI has batteries of occupational competency examinations at two different levels. TOCTs determine journeyman level or experienced worker level competency and SOCATs assess job-ready or entry level occupational competency. To aid in determining which test is appropriate, NOCTI has developed for each test a scope which outlines the skills and knowledge required. The scope can simply be evaluated in relation to a person's background and a decision rendered concerning which test best fits. A sample scope is provided in Appendix C.

NOCTI examinations are unique in that they have two parts. Each exam involves a 200 item written multiple choice test covering the technical and related knowledge required in the occupation as well as an extensive performance test which calls on the test taker to demonstrate the skills and abilities necessary for occupational competency. Although the written test is simple to administer, the performance test must be given by trained examiners in a shop or laboratory under relatively standard controlled circumstances. Among the strongest of NOCTI's attributes is its national network of over 60 area test centers throughout the United States states and U.S. territories. This network has been in operation for over 20 years and can easily accommodate military personnel who wish to move into the civilian work force. Specific test center information is provided in Appendix D. Test centers are located so that in most cases military personnel would find one a reasonable distance from their bases of operation or homes.

Area test center coordinators are very experienced in advising potential test takers and extremely knowledgeable about NOCTI test products. Since most NOCTI test takers come to a test center with various levels of public or private training and different types of experience, the area test center coordinator must assess the individuals background and determine which NOCTI test is appropriate. The proposed process for the military would be no different. As a matter of fact, many military personnel have already been through the NOCTI testing program. An area test center coordinator would merely be matching military training/experience to the appropriate NOCTI test rather than attempting to match civilian training/experience to a NOCTI test. In many cases, it may be easier to make a test determination for military personnel because their accumulated training/experience may be better documented in their service records.

NOCTI publishes scopes for all of its TOCT and SOCAT tests. Anyone who wishes to examine what is covered in a test can secure a scope from an area test center coordinator or directly from NOCTI. A test candidate is encouraged to review the scope to ensure he or she is comfortable with the skills required in the test. Clearly this is the central part of the dialog between the area test center coordinator and the test candidate.

TOCT tests are only distributed through area test centers, which closely oversee test administration. This does not preclude establishing additional area test centers to accommodate the military on bases in this county or throughout the world. The NOCTI consortium and governing board have expressed a sincere desire to serve the military.

SOCATs are not distributed exclusively through area test centers but are provided directly to schools or institutions. However, local agencies who use SOCATs are also responsible for their own test administration, which includes examiner training. NOCTI recommends that skilled persons from the occupational field being tested be employed to administer the performance portion of the SOCAT test. This has particular advantages the military may wish to examine. Skilled persons from the occupation are often also employers who, after giving a test, might hire or tell other potential employers about the skills of those taking the test, particularly the very skilled.

The key benefit of our model and the NOCTI testing process is the result each test taker receives. Beyond a total score for the written test and a total score for the performance test, NOCTI tests yield diagnosis-like sub-scores which parallel major skill areas required in the occupation. Accordingly, the test results exhibit the candidates' strengths and weaknesses in the various skill areas required in the occupation. A sample score report is provided in Appendix E.

An individual who has completed a NOCTI exam is equipped with a credential which reflects his or her demonstrated occupational competency on a nationally standardized occupational competency examination. This credential, in the form of a diagnostic printout, can be presented to potential employers as evidence of competency, used by officials to grant college or university credit, or studied to assess the additional training or experience necessary to equip the test taker for occupational competency.

As seen in our conceptual model, often no additional training or experience may be necessary to move from the military sector to a comparable occupational career in the civilian work force. Occupational competency documented through the NOCTI test is all that is needed as a credential to present to employers.

An additional benefit to employers who use the NOCTI test results wisely is better productivity. The test results can help employers place new employees in the areas which reflect their highest skills. Also most employees like to do what they are good at. This translates into higher productivity, greater worker satisfaction, and less absenteeism. For the worker, this means a better work record and a greater chance of advancement. Truly a winning formula for all concerned.

## Additional Training/Education

Those who find from the NOCTI test results that they need additional training have a host of options. Federal legislation has ensured that all states have vocational/technical education programs. These programs are conducted at public secondary and postsecondary technical schools, community and junior colleges, technical colleges, and institutes as well as through private institutions and proprietary schools. Having examined these programs over the years as a vocational administrator, teacher educator, and accreditation team member, I have discovered that they all have the same objective: to provide graduates with the skills necessary for employment in the occupation for which they are being trained. The only difference in these programs is the extent to which they go beyond what is required for minimum job readiness.

The skills which are necessary to be a welder are the same throughout the country and therefore the core skills taught in good welding training programs around the country are the same. The NOCTI exams were also all built on the premise that core occupational competency for a particular occupation is the same across the country. NOCTI test results can therefore be universally interpreted by most vocational/technical teachers and administrators or by area test center coordinators.

An important aspect of NOCTI test results is that they can easily be equated to academic credit. Faculty members can examine the tests and determine what score levels are required to receive credit for which course(s). This process has long been accepted practice in education. Many schools reluctant to grant credit for military or civilian training or experience are willing to translate demonstrated skill on a national exam to academic credit. Appendix F lists the many institutions nationally which grant credit for NOCTI test results. Generally SOCAT test results are equated to credit toward an associate degree and TOCT test results toward a bachelor's degree. This doesn't mean a person moving from the military to a civilian job who needs additional training as determined by the NOCTI test must be on a degree track. With the current shortage of technically trained people in the work force, that certainly is not the case. Getting on a degree track is just another option facilitated by the NOCTI testing program.

## Civilian Occupations

Central to establishing a process which facilities the movement of military personnel into the civilian work force are the means to ensure that these skills are fully documented. This process can not merely focus on low-level, low-paying jobs but must recognize and document the skills and knowledge military personnel have acquired through training and experience. Many military personnel have expertise which is in high demand in the civilian work place. The NOCTI exam enables people to document their skills and exhibit an appropriate credential to potential employers. As discussed in the previous section, the NOCTI results enable an employer to fully appreciate job seekers' skills so they can be placed in positions which maximize their potential productivity.

Teaching/training is a career many in the military may not have considered, but the current demand for vocational/technical teachers and trainers in business and industry is huge. Many of these jobs require training and occupational experience but not a bachelor's degree. Since most states require the NOCTI TOCT to teach in public schools, a person leaving the military with the correct training, work experience, and passage of the NOCTI TOCT could move right into a teaching career. If a bachelor's degree is required or if an individual wishes to pursue a degree, the mechanism to grant credit toward the degree is set up in almost every state. Teacher certification requirements involving the use of NOCTI TOCT's are outlined in Appendix F.

# Practical Applications

In order to demonstrate practical applications of the conceptual model, 10 NOCTI TOCT occupational competency examinations corresponding to 10 or more military occupational MOS training programs have been selected. The military occupational areas selected have very similar counterparts in all branches of the service so that the broadest impact could be demonstrated. Under each exam title is listed the appropriate MOS training/competencies as well as state and/or national licensure implications.

1. NOCTI test title: Quantity Food Preparation (TOCT Test Code 017)
   MOS: Food Service Specialist (Army MOS-94B-002; similar occupational titles in other branches)
   Training/competencies: Plans food menus; prepares, cooks and serves food; performs food service advisory and administrative activities; operates and maintains food service equipment.
   State/national licensure implications: Generally states do not license individuals associated with food service, although the facilities may need to be licensed.

2. NOCTI test title: Computer Technology (TOCT test code 026)
   MOS: Data Processing Technician (Navy NER-DP- 002; similar occupational titles in other branches)
   Training/competencies: Operates data processing equipment and peripherals; constructs flow charts; prepares and maintains program run books; writes, debugs, and documents Cobol and Fortran; performs computer maintenance.
   State/national licensure implications: None

3. NOCTI test title: Electronics Communications (TOCT test code 015)
   MOS: Electronic Technician (Navy NER-ET- 002; similar occupational titles in other branches)
   Training/Competencies: Performs maintenance of electronic equipment and components; reads schematic diagrams; localizes malfunctions; replaces parts or subassemblies; aligns, adjusts, calibrates, and performs preventative maintenance on equipment.
   State/national licensure implications: Generally no licensure is required for electronics technicians.

4. NOCTI test title: Heavy Equipment Mechanics (TOCT test code 069)
   MOS: Construction Equipment Repairer (Army MOS-62B-003; similar occupational titles in other branches)
   Training/competencies: Supervises or performs maintenance of equipment, gasoline, diesel and electrically powered construction and associated equipment; diagnoses malfunctions and determines the level of maintenance to be performed; performs final inspection of repaired equipment.
   State/national licensure implications: Most often no license is required. In the few cases where state license is required, standards vary by state.

5. NOCTI test title: Auto Mechanics (TOCT test code 003)
   MOS: Light Wheel Vehicle Mechanics (Army MOS-63B-003; similar occupational titles in other branches)
   Training/competencies: Diagnoses and repairs internal combustion engines, accessories, power trains, and chassis components; road tests vehicles; supervises and instructs subordinates in test and repair procedures as well as shop practices.
   State/national licensure implications: Many states require auto mechanics to pass a written examination to be licensed. The national Automotive Service Excellence (ASE) examination is accepted in many states for licensure.

6. NOCTI test title: Printing (TOCT test code offset 019; letter press test code 073)
   MOS: Photolithographer (Army MOS-83F-002; similar occupational titles in other branches)
   Training/competencies: Operates bindery equipment, offset presses, and duplicating equipment; supervises photolithographic activities; makes quality checks; performs maintenance on printing and binding equipment.
   State/national licensure implications: No licensure is required.

7. NOCTI test title: Machine Trades (TOCT test code 020)
   MOS: Machinery Repairman (Navy NER-MR-001; similar occupational titles in other branches)
   Training/competencies: Performs maintenance using machine shop equipment, lathes, milling machines, boring mills, grinders, power hacksaws, drill presses, and other machine tools; performs maintenance on machine tools; reads blueprints; solves basic algebraic and trigonometric layout problems.
   State/national licensure implications: No licensure required.

8. NOCTI test title: Drafting Occupations (TOCT test code 060)
   MOS: Technical Drafting Specialist (Army MOS-81B-003; similar occupational titles in other branches)
   Training/competencies: Drafts detailed working plans for construction of bridges, roads, piers, buildings, and utilities; assists in the construction or design drafting; prepares drawings and plans of miscellaneous structures and mechanical and electrical devices.
   State/national licensure implications: States do not require draftsmen to be licensed.

9. NOCTI test title: Auto Body Repair (TOCT test code 002)
   MOS: Metal Worker; (Army MOS-44B-003; similar occupational titles in other branches)
   Training/competencies: Repairs and straightens metal body panels and sheet metal; welds ferrous and non-ferrous metals; removes and replaces body trim; prepares surfaces for painting; fabricates parts.
   State/national licensure implications: A few states require licensure but the standards widely vary.

10. NOCTI test title: Building Trades Maintenance (TOCT test code 025)
    MOS: Builder (Navy NER-BU-001; similar occupational titles in other branches)
    Training/competencies: Performs construction maintenance; repairs wooden, concrete and masonry structures; installs floor and wall coverings, door and window trim, moldings and glass; mixes, places, and finishes concrete; reads blueprints and makes simple shop drawings.
    State/national licensure implications: Most states require builders to be licensed but standards very widely. Most tests require knowledge of national and/or state building codes.

## State Licensure/Certification Implications

State certification or licensure may be a factor as military personnel attempt to move from the military into a similar civilian occupation. For that reason, auto mechanics and building trades were included among the 10 occupations used to demonstrate the application of our model. Most states generally require licensure or certification in auto mechanics and building trades. Although standards vary widely from state to state, some type of written examination is most often employed to ensure the licensure/certification candidate has the skills required by that state.

To more closely examine the typical licensure/certification requirements and the subsequent education/training necessary to be prepared to pass a state-required licensure/certification test, the State of Michigan was selected. Specifically, officials were asked about the requirements for licensure or certification as an auto mechanic and as a builder. Interestingly enough, licensure/certification in these two occupational areas are administered through two separate offices within the state government. Auto mechanics are certified by the Michigan Secretary of State and builders are licensed through the Michigan Department of Licensing and Regulation. Both programs, however, require completion of a paper and pencil test with a score above a state-determined minimum to obtain licensure/certification. For auto mechanic certification, the candidate may take either the state-prepared auto mechanics test or the Automotive Service Excellence (ASE) examination, which is used by many states for certification purposes. A passing score on either exam will yield certification. For a prospective builder, only one state test is available.

Specifically with regard to auto mechanics certification, when we asked how to prepare for the test we were referred to a list of textbooks for self-study or to area high schools and community colleges for formalized vocational auto mechanics training programs; see Appendix H. Since the NOCTI exam for auto mechanics reflects what is required in the industry to be an auto mechanic as well as training programs designed for auto mechanics, taking the NOCTI test would help an individual in the military preparing for a civilian sector job as an auto mechanic to determine his or her strengths and weaknesses prior to attempting to take the state test. The Michigan test and the NOCTI test are very similar in content. Taking the NOCTI test would allow an individual to determine if additional course work, experience, or self-study would be necessary in order to perform well on the state certification test in auto mechanics. Currently, the NOCTI auto mechanics test is used in this fashion by vocational centers and community colleges across the country.

Concerning building trades, Michigan officials recommended extensive study of state and national building codes as preparation for their test. Once again, we were referred to a listing of textbooks and directed to local high schools or community college vocational programs in building trades for formalized courses and programming. Again, the NOCTI examination would be an excellent step for an individual in the military to take in preparation for seeking licensure as a builder. Since the exam is built around the national building code, test results would indicate to people in the military what their strengths are in relation to building trades and for which areas they needed to seek additional course work, self-study, or experience prior to attempting the state building exam. Although the NOCTI test does not contain state building code items, it does parallel the state exam in relation to national building code content and general building competencies.

Licensure/certification does not have to be a barrier to personnel attempting to move from the military into a civilian occupation. With the proper preparation, the transition can be efficient, rewarding, and smooth.

## Summary

World events will require that the United States downsize its military forces. Many of those who will be exiting the branches of the service possess excellent technical skills at a time when a shortage of technically competency workers exists in the civilian work force. This paper presented a model of how NOCTI occupational competency examinations can assess the civilian occupational competency of military persons to provide evidence of their skills, a credential for movement directly into the work force, an indication of the additional training necessary for occupational competency, or academic credit at the college level.

Central to the model is the conviction that military personnel must have an accurate assessment of their skills so that they may best present themselves to potential employers and secure a position commensurate with their acquired competency. An appropriate placement means higher productivity, greater job satisfaction, and improved opportunity for success.

Ten specific NOCTI test titles were matched to military occupational specialties to provide examples of how the model could work. Types of institutions which could provide additional training to those who need it as determined by testing as well as the training/competencies required by the military in the 10 occupational areas were cited. State and national licensure implications were also discussed. The NOCTI network of more than 60 area test centers was reviewed, as was their potential for serving those leaving the military. It was demonstrated that NOCTI tests provide an excellent means to help military personnel move into the civilian work force.

# References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## AVAILABLE TOCTS

Air Conditioning, Heating & Refrigeration
Airframe and Power Plant Mechanics
Appliance Repair
Architectural Drafting
Audio-Visual Communications Technology
Auto Body Repair (2)
Auto Mechanics
Baking
Brick Masonry
Building and Home Maintenance Services
Building Construction Occupations
Building Trades Maintenance
Cabinet Making and Millwork
Carpentry
Child Care and Guidance
Civil Technology
Commercial Art
Commercial Photography
Computer Science for Secondary Teachers
Computer Technology
Cosmetology
Diesel Engine Repair
Diesel Mechanics
Drafting Occupations
Electrical Construction and Maintenance
Electrical Installation
Electronics Communications
Electronics Technology
Heating
Heavy Equipment Mechanics
Industrial Electrician
Industrial Electronics
Machine Drafting
Machine Trades
Masonry
Masonry Occupations
Materials Handling
Mechanical Technology
Microcomputer Repair
Painting and Decorating
Plumbing
Power Sewing
Printing - Letterpress
Printing - Offset
Quantity Food Preparation
Quantity Foods
Radio/TV Repair
Refrigeration
Scientific Data Processing
Sheet Metal
Small Engine Repair (2)
Textile Production and Fabrication
Tool and Die Making
Welding (2)



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# SOCATS AVAILABLE

Accounting/Bookkeeping
Agriculture Mechanics
Appliance Repair
Architectural Design
Audio-Visual Communications
Auto Body
Auto Mechanics
Automotive Specialist
Baking
Building Construction Occupations
Building Trades Maintenance
Business Data Processing
Cabinetmaking
Carpentry
Child Care Services
Clothing & Textiles Mgmt & Production
Commercial Art
Commercial Foods
Computer & Information Sciences
Computer Programming
Construction Electricity
Construction Masonry
Dental Assisting
Diesel Engine Mechanics
Diversified Occupations*
Drafting
Electrical Construction & Maintenance
Electrical Occupations
Electrical Technology
Electromechanical Technology
Electronics
Electronic Technology
Food Production, Mgt., & Services
Forestry Products and Processing
General Drafting & Design
General Merchandising
General Office
General Secretarial
Graphic Arts
Health Assisting
Heating
Heating & Air Conditioning
Heavy Equipment Maint. & Repair
Home Entertainment Equip. Repair
Home Health Aide
Horticulture
Industrial Electricity
Industrial Electronics
Machine Trades
Marketing & Distribution
Mechanical Drafting
Medical Assisting
Nursing Assisting
Painting and Decorating
Plumbing
Practical Nursing
Production Agriculture
Refrigeration
Sewn Products
Sheet Metal
Small Engine Repair
Truck & Bus Mechanics
Warehousing
Welding

*Written test only; no performance test

## FIELD TESTS AVAILABLE

Auto Diesel Mechanics
Civil Technology
Communication Electronics
Metalworking & Fabrication
Upholstering



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NATIONAL OCCUPATIONAL COMPETENCY TESTING INSTITUTE

SCOPE OF WELDING EXAMINATION

TEST CODE #021

WRITTEN TEST (174 Questions)

TIME: 3 Hours

PERCENT OF TEST

2% GENERAL WELDER QUALIFICATIONS
Per Section #9, ASME Boiler and Pressure Vessel Codes.

3% WELDING SYMBOLS
Recognition, application.

2% JOINT DESIGN
Working knowledge of basic principles of joints, why a given design is used.

4% WELDING DEFECTS AND CAUSES
Working knowledge of possible defects, causes, and prevention.

5% TESTING
Tests commonly used in welding, use of test equipment.

3% ELECTRICITY
Use of various currents.

9% BASIC METALLURGY
Grain structure of metals, properties of metals, solders, and alloys, hardening operations.

14% OXYFUEL WELDING
Complete set-up, safety, use of torch on various metals, gas cutting, flux and filler selection.

10% BRAZING
Heating methods, brazing alloys, use of torch on various metals.

3% HARD SURFACING
Principles of operation, types of wear, conditions, and preparation for hard surfacing.

5% OTHER PROCESSES
Welding principles of ultrasonic, electronic beam, thermit, solid state, and laser welding.

16% SHIELDED METAL ARC WELDING
Complete set-up, principles of operation, current, and rod selection, use of test equipment, welds in the various positions.

(continued on other side)

10% GAS METAL ARC WELDING
Set-up and shut down of equipment, principles of operation, techniques, electrode and wire sizes, power sources, shielding gases.

14% GAS TUNGSTEN ARC WELDING
Set-up and operation of equipment, filler metals, electrode installation, regulators and flow meters, torches and torch angles, electrodes, welding common metals.

WELDING

PERFORMANCE TEST

TIME: 4 Hours

PERCENT
OF TEST

27% SHIELDED METAL ARC WELDING
Set-up of material to be welded. Current and rod selection. Set-up of welding, test, and grinding equipment. Weld in various positions.

26% OXY-FUEL WELDING
Set-up of materials to be welded. Adjustment of equipment and torch. Testing of welds. Welds in the various positions. Set-up of equipment. Preparation of material for brazing and cutting. Selection of correct tips, flux, and rods.

28% GAS METAL ARC WELDING
Set-up of equipment. Preparation and set-up of materials. Selection of rods. Welds in the various positions.

19% GAS TUNGSTEN ARC WELDING
Set-up of equipment. Preparation and set-up of material. Selection of rods. Welds in the various positions.

PREPARATION: Personal tools may be used. Appropriate work clothes and safety equipment are to be furnished by the candidate: shoes, welding gloves and apron, welding hood and brazing goggles. A calculator may be used for both the written and performance examinations.

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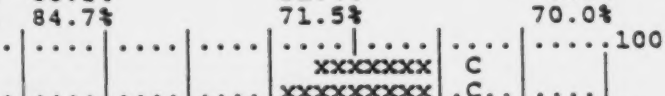
TEACHER OCCUPATIONAL COMPETENCY TEST
Administered By
National Occupational Competency Testing Institute
2/14/89

Candidate Name: DOE, JOHN — Soc Sec Num: 000-00-0000
Test Center: Anywhere, U.S.A. — Center Code: 000
Test Title : Auto Body Repair - Form D — Test Code : 2 -2
*** NT indicates section NOT TAKEN ***

| WRITTEN TEST | Candidate | Center | Nation |
|---|---|---|---|
| Welding | 75.0% | 74.7% | 69.2% |
| Filling Operations | 85.0% | 74.4% | 73.1% |
| Repairing Sheet Metal | 83.3% | 67.2% | 67.2% |
| Refinishing | 78.9% | 64.9% | 66.3% |
| Panel Replacement | 93.3% | 76.5% | 75.3% |
| Frame (Unitized Body) | 100.0% | 79.0% | 72.2% |
| Front-End Alignment | 100.0% | 63.8% | 70.6% |
| Electrical & Accessory Systems | 66.7% | 60.8% | 60.0% |
| Glass, Trim and Hardware | 72.7% | 71.1% | 68.8% |
| Estimating, Tools, Equipment | 88.2% | 81.4% | 78.5% |
| Total | 84.7% | 71.5% | 70.0% |

C=Candidate Score
x=68% of Center pop.
x=68% of Nation pop.




| PERFORMANCE | Candidate | Center | Nation |
|---|---|---|---|
| Sheet Metal Repair | 80.0% | 84.3% | 84.0% |
| Diagnosing Structural Damage | 100.0% | 86.6% | 79.4% |
| Glass Trim Repair | 100.0% | 88.6% | 89.2% |
| Electrical Work | 100.0% | 94.6% | 90.2% |
| Total | 88.7% | 87.7% | 85.1% |

C=Candidate Score
x=68% of Center pop.
x=68% of Nation pop.

# SURVEY OF NECESSITY OF OCCUPATIONAL EXAMINATIONS FOR CERTIFICATION AND UNIVERSITIES GRANTING CREDIT FOR SUCCESSFUL PASSING OF NOCTI TOCT EXAMINATIONS

(Conducted Spring 1989)

| STATE OR TERRITORY | OCCUP. EXAM NECESSARY FOR CERTIFICATION? Yes | No | UNIVERSITY GRANTING CREDIT | AMOUNT OF CREDIT |
|---|---|---|---|---|
| Alabama | X | | Atens State College<br>Auburn University | 60 Qtr. Hours<br>30 Qtr. Hours |
| Alaska | | X | None | |
| Arizona | | X | Northern Arizona Unversity | 18 Qtr. Hours |
| Arkansas | X | | Univ. of Arkansas at Fayette-ville<br>Univ. of Central Arkansas at Conway | Up to 36 Hours<br>Up to 18 Hours on Assoc. degree |
| California | | X | None | |
| Colorado | X*(W) | | Colorado State University | 40 Sem. Hours |
| Connecticut | | X | Central Ct. State University | 25 Sem. Hours |
| Delaware | | X | Delaware State College | 24 Sem. Hours |
| District of Columbia | | X | University of Dist. of Col. | 22 Sem. Hours |
| Florida | | X | Florida A & M<br>Florida International Univ.<br>University of Central Florida<br>University of Northern Florida<br>University of South Florida<br>University of West Florida | 30 Sem. Hours<br>30 Sem. Hours<br>30 Sem. Hours<br>30 Sem. Hours<br>30 Sem. Hours<br>30 Sem. Hours |
| Georgia | X | | Armstrong/Savannah State Coll.<br>Georgia Southern College<br>Georgia State University<br>University of Georgia<br>Valdosta State College | 25 Qtr. Hours<br>25 Qtr. Hours<br>25 Qtr. Hours<br>25 Qtr. Hours<br>25 Qtr. Hours |
| Hawaii | | X | University of Hawaii | 40 Sem. Hours |
| Idaho | | X | Idaho State University<br>University of Idaho | 25-50 Sem. Hrs.<br>45 Sem. Hours |
| Illinois | | X | City-Wide Colleges of Chicago | Variable |

*only for specified occupational areas at present
(W) = Written only



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| STATE OR TERRITORY | OCCUP. EXAM NECESSARY FOR CERTIFICATION? Yes | No | UNIVERSITY GRANTING CREDIT | AMOUNT OF CREDI |
|---|---|---|---|---|
| Indiana | X (W) | | Ball State University<br>Indiana State University<br>Purdue University | Not req'd for comp<br>Not req'd for comp<br>32 Sem. Hours |
| Iowa | X | | Iowa State University | Up to 30 Sem. Hrs |
| Kansas | X (W) | | Pittsburg State University | 24 Sem. Hours |
| Kentucky | X (W) | | Eastern Kentucky University<br>Morehead State University<br>Murray State University<br>Northern Kentucky University<br>University of Kentucky<br>University of Louisville<br>Western Kentucky University | 18 Sem. Hours<br>18 Sem. Hours**<br>18 Sem. Hours**<br>18 Sem. Hours<br>18 Sem. Hours<br>18 Sem. Hours<br>18 Sem. Hours. |
| Louisiana | X | | None at this time | |
| Maine | | X | University of Southern Maine | 10 Sem. Hours |
| Maryland | | X | Uses own tests | |
| Massachusetts | | X | Uses own tests | |
| Michigan | X (1991) | X | Central Michigan University<br>Eastern Michigan University<br>Ferris State University<br>Madonna College<br>Michigan State University<br>Northern Michigan University<br>Siena Heights College<br>Wayne State University<br>Western Michigan University | 20 Sem. Hours<br>24-36 Sem. Hours<br>60 Qtr. Hours<br>24 Sem. Hours<br>45 Qtr. Hours<br>24 Sem. Hours<br>30 Sem. Hours<br>30 Sem. Hours<br>20 Sem. Hours |
| Minnesota | | X | University of Minnesota-Duluth | Variable |
| Mississippi | X | | Mississippi State University<br>University of Southern MS | 24 Sem. Hours<br>Not yet determine |
| Missouri | | X | University of Missouri at Columbia | Variable - Up to 27 Sem. Hours |
| Montana | | X | Northern Montana College | Variable - Up to 59 Qtr. Hours |
| Nebraska | | X | Chadron State College<br>Kearney State College<br>University of Nebraska<br>Wayne State College | Variable<br>40 Sem. Hours<br>Variable<br>Variable |
| Nevada | | X | University of Nevada at Reno | 36 Sem. Hours |



**for four-year degree only

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| STATE OR TERRITORY | OCCUP. EXAM NECESSARY FOR CERTIFICATION? Yes | No | UNIVERSITY GRANTING CREDIT | AMOUNT OF CREDIT |
|---|---|---|---|---|
| New Hampshire | | X | Keene State College<br>University of New Hampshire | 30 Sem. Hours<br>Variable - Up to 30 Sem. Hours |
| New Jersey | | X | Glassboro State College<br>Rutgers, The State University (Cook College requires TOCT)<br>Trenton State College | Up to 18 Sem. Hrs.<br>18 Sem. Hours<br>28 Sem. Hours |
| New Mexico | | X | Eastern New Mexico University | 45 Sem. Hours |
| New York | | X | City College of New York<br>State University College at Buffalo | 16-32 Sem. Hours<br>30 Sem. Hours*** |
| North Carolina | | X | None | |
| North Dakota | X***** | | ND State College of Science | Variable |
| Ohio | | X | Cleveland State University<br>The Ohio State University<br>University of Cincinnati<br>University of Toledo | 36 Qtr. Hours<br>24 Qtr. Hours<br>36 Qtr. Hours<br>36 Qtr. Hours |
| Oklahoma | X | | Central State University<br>Oklahoma State University | 24 Sem. Hours<br>24 Sem. Hours |
| Oregon | | X | Oregon State University | Up to 45 Qtr. Hour |
| Pennsylvania | X | | Indiana University of Penn.<br>Pennsylvania State University<br>Temple University<br>University of Pittsburgh | 24 Sem. Hours***<br>24 Sem. Hours***<br>24 Sem. Hours***<br>24 Sem. Hours*** |
| Puerto Rico | | X | None | |
| Rhode Island | X | | Rhode Island College | 32 Sem. Hours |
| South Carolina | | X | None | |
| South Dakota | | X | None | |
| Tennessee | | X | Middle Tenn. State University | 18 Sem. Hours |
| Texas | | X | Texas A & M University<br>University of Houston<br>University of North Texas | 24 Sem. Hours<br>30 Sem. Hours<br>24 Sem. Hours |
| Utah | X***** | | Utah State University | 18 Qtr. Hours |
| Vermont | X***** | | University of Vermont | Up to 30 Sem. Hrs |

***for B.S. degree only; not for certification



****These hours are awarded after the completion of 90 credit hours towards a Bachelor's degree.

*****Required for preservice teachers lacking work experience

| STATE OR TERRITORY | OCCUP. EXAM NECESSARY FOR CERTIFICATION? Yes | No | UNIVERSITY GRANTING CREDIT | AMOUNT OF CREDIT |
|---|---|---|---|---|
| Virgin Islands | | X | None | |
| Virginia | X***** | | George Mason University<br>James Madison University<br>Old Dominion University<br>Virginia Commonwealth Univ.<br>Virginia Polytechnic Institute | 30 Sem. Hours<br>9 - 12 Sem. Hours<br>24 Sem. Hours<br>Up to 30 Hours<br>30 Sem. Hours |
| Washington | | X | Central Washington University | Up to 45 Qtr. Hours |
| West Virginia | X***** | | West Virginia Inst. of Tech. | 30 Sem. Hours |
| Wisconsin | | X | University of Wisconsin-Stout | 24 Sem. Hours |
| Wyoming | | X | University of Wyoming | Variable |

******Required for preservice teachers lacking work experience.

Number surveyed: 54
Number responded: 53 (Guam did not respond)

# Competency Requirements of Managerial Jobs in the Public and Private Sector: Similarities and Differences

Joyce L. Shields and Joanne Adams

## Introduction

This is a time of rapid social, political, and environmental change. These changes have been evidenced by such events as the destruction of the Berlin Wall, free elections in Poland, Czechoslovakia, Romania, and Hungary, and pressures to reduce the budget deficit through reductions in defense spending. This will require the U.S. military to reduce and restructure its forces in alignment with the changing threat. This reduction will lead to a number of civilian personnel seeking positions in the private sector who were former civilian public sector employees. This reduction raises several policy issues connected with retraining of military, civilian, and defense personnel and the impact of reduced flows through the military on educational institutions. The purposes of this paper are to:

- Present the concept of job competency as a requirement for successful managerial performance;
- Discuss differences and similarities in competency requirements between the public and private sectors; and
- Present an approach for training and developing competencies, to assist in the transition of civilian public sector employees to the private sector.

## Background

Job competencies are the critical characteristics that cause or predict outstanding job performance in an organization. The concept of job competencies arose out of a methodology called Job Competency Assessment (JCA), which is formulated around three basic assumptions:

1) In every job, some people perform more effectively than others. These people also approach their jobs differently from the average worker.

2) These differences in approach relate directly to specific characteristics or competencies of the superior performers that are often absent in the fully successful performers.

3) The best way to discover the characteristics that relate to effective performance in an organization is to study its top performers.

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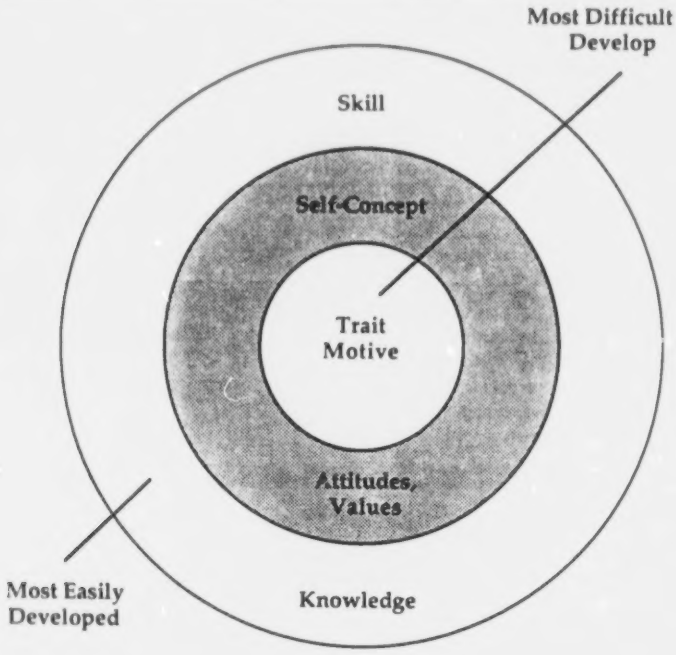
Note: Joyce L. Shields is president and chief executive officer of Hay Systems Inc. Joanne Adams is director of workforce assessment and management at Hay Systems.

A job competency model is comprised of several individual competencies, which include knowledge, skills, attitudes and values, and traits and motives. These characteristics exist at various levels in a person, with the inner levels (traits, motives) representing characteristics that are more enduring, and often having a wider range of effect on the individual's behavior. Further, the more complex the job, the more important job competencies are relative to technical or task mastery. These characteristics are illustrated in Figure 1.

**Figure 1.—Competency levels**




Often our "gut feelings" tell us when someone is a high performer in a job, but we can't exactly tell why it is so; the qualities that lead to high performance levels are often difficult to identify. However, traditional job analysis approaches focus entirely on the tasks performed in the job rather than on top performers. An error in this approach is that it will usually lead to a definition of what is required for average or even minimum performance. JCA takes a more direct approach by focusing on the superior rather than the average performers, to find out what they do when they are in critical job situations in which they believe they have been effective. JCA is composed of four main activities:

1) Convening expert panels to identify the characteristics that superior performers use to make themselves highly successful, to define the major accountabilities and responsibilities of the target positions, and to "nominate" competencies which appear to distinguish superior and threshold performance.

2) Analyzing of questionnaire responses about the job competencies which are more characteristic of superior performers than average performers with whom the respondent is familiar.

3) Conducting in-depth interviews, called Behavioral Event Interviews (BEIs), with a sample of superior job incumbents and a sample of average job incumbents to identify competencies demonstrated in their work experiences.

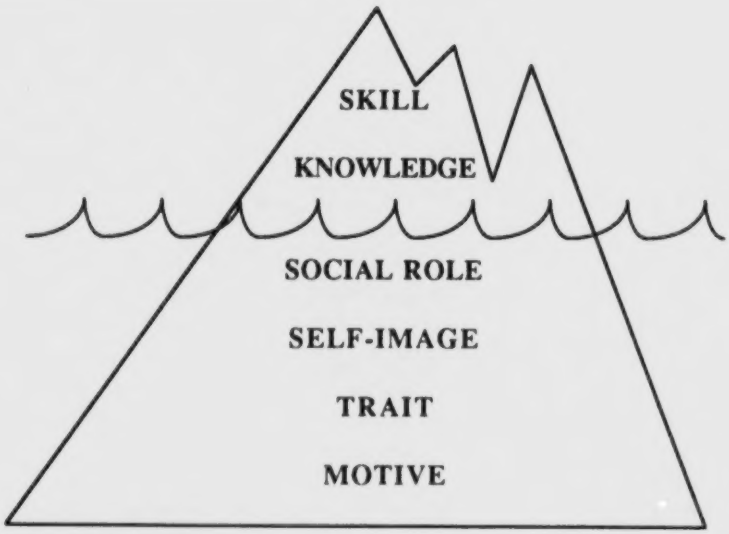
4) Consolidating this information into a competency model, which describes the characteristics that distinguish the superior performers from others.

Appendix A of this paper contains a more detailed description of these steps.

Different types of competencies are associated with different aspects of human behavior and with the ability to demonstrate such behavior. For example, an "influence" competency would be associated with specific actions, such as having an impact on others, convincing them to perform certain activities, and inspiring them to work toward organizational objectives. A "planning" competency, on the other hand, would be associated with specific actions such as setting goals, assessing risks, and developing a sequence of actions to reach a goal. These two types of competencies involve different aspects of human behavior.

The importance of competencies is often overlooked in favor of specialized job-related knowledge. This is partly because skill and knowledge have a more observable effect on an individual's performance. However, many scientists believe that although knowledge is important, it is as equally important to focus on the competencies that allow employees to use the facts and concepts contained in the knowledge. Known as the "iceberg" model, the skills and knowledges are only a small portion of the characteristics that define successful performance (see Figure 2).

**Figure 2.—The competency "iceberg" model**




## Competency Research

Using the theory and methods of Job Competency Assessment, a landmark study was conducted to determine the competency profiles of effective managers, and to identify the variance of the profiles across job level and between the public and private sectors.[1] These research results present a rare opportunity to look at the similarities and differences in the competencies demonstrated by managers in each sector, and to make some determinations about the training needs for civilian managers moving from the public sector to the private sector. This research serves as the basis for discussing ways to identify training/development needs, and is not meant to be a comprehensive survey of the subject matter. It is used only as an illustration of the recommended approach to this problem.

Over 2000 managers in 41 separate public and private sector organizations were studied. The analysis was conducted in order to explain differences in performance as a result of certain competencies which managers share. This study concluded that specific personal characteristics could be identified which



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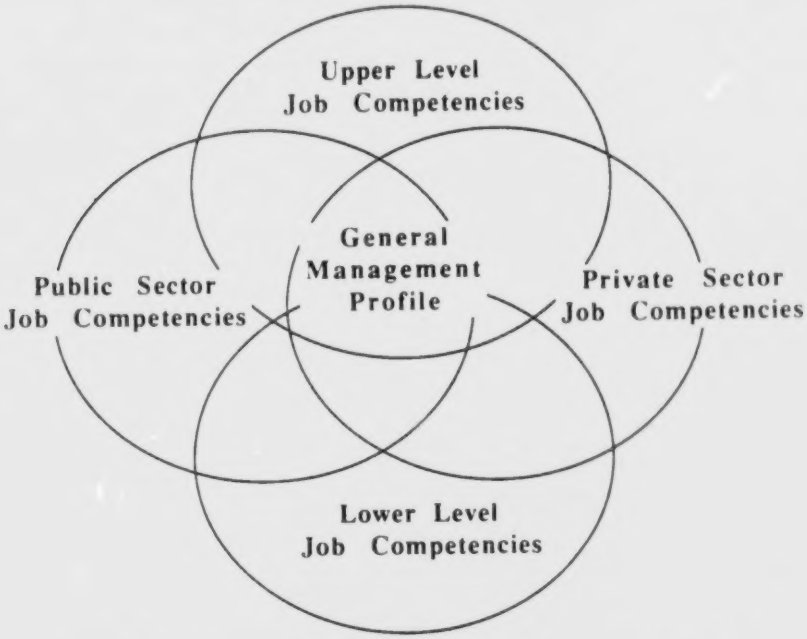
differentiate superior managers from average managers. The results included a general competency model of managers and several subsets representing the models for managers in the specific sector or level. The general model of management effectiveness includes four important clusters: "Goal and Action Management," "Leadership," "Human Resource Management," and "Focusing on Others." Each cluster contains several individual competencies, most of which differ in their relationship to effective performance in the public and private sectors. In the next section of this paper, these results will be applied to an analysis of the similarities and differences between management sector jobs and their implications for transitioning managers from the public to the private sectors. This relationship is illustrated in Figure 3.

**Figure 3.—Job competency requirements**




## Job Sector Competencies: Similarities and Differences

To what extent do management jobs in the public and private sectors have congruent job demands and organizational environments? Answering this question would significantly contribute to our understanding of the potential gap in the qualifications of individuals transitioning from the defense department. On the other hand, a direct analysis of the competency requirements of managers in the public and private sectors offers an immediate vehicle for predicting the performance gaps for individuals migrating from one sector to the other. Also, analysis of consistent linkages between competencies and job and environmental demands allows us to identify the contextual "stimulus" for the development of the competency.

As reflected in Figure 4, effective performance is comprised of three components: the individual, the job, and the organization. Individual competencies interact with the demands or requirements of the job and the organization's internal and external environment to result in effective performance.

**Figure 4.—Model of effective job performance[2]**

The job demands in management positions relate to the central duties of planning, organizing, etc. Each one of these demands, however, varies according to several aspects of the particular job. For instance, under the "planning" duty, an executive-level manager may be responsible for determining overall organizational performance goals such as an increase in return on assets. An entry-level manager may be responsible for determining the performance goals of individual contributors. In each case the manager has some degree of responsibility for establishing goals and developing plans for achieving those goals. In some cases it is the same competency that enables each of these managers to perform his or her function effectively, in other cases different actions or behaviors are linked to separate competencies.

The organizational environment adds an important additional factor to the equation. The organization has policies and procedures, which are usually reflected in its internal structure and systems. It also has a mission, which may be reflected in its functions, activities, and corporate strategy. The organization has a culture and financial and technical resources. In addition, the organization exists within a larger environment consisting of the social, economic, and political community, and industry.

As the performance model (see Figure 4) suggests, effective performance will result when all three of the components of the model (individual-job-organization) fit together in a consistent manner. Although it is possible for effective performance to result if only two components of the model fit together, it is unlikely that consistently effective performance will result.

Some of the important differences in the job demands of managers in the public and private sectors are presented in Table 1. These differences will form the foundation for competency requirement differences which are discussed in the next section. Following that section, similarities in the competency requirements between the two sectors are presented.

**Table 1.—Job sector demands**

| Public Sector | Private Sector |
|---|---|
| Greater functional integration; fewer "hard" measures of performance and productivity | Greater access to performance feedback and specific measures of productivity, i.e., profit, market share, scrap waste |
| Less opportunity for individual, unilateral change; more bureaucratic obstacles | Less formalization; more opportunity to establish goals and plans, and to solve problems |
| More standard operating procedures and detailed policies and regulations; higher routinization | Fewer policies and standardized procedures; less routinization; greater need to make strategic decisions; access to a greater amount and variety of information |
| Less opportunity to symbolically assert one's status | More access to symbols of power |
| Less frequency and experience with making presentations due to greater scrutiny from the public, Congress, etc. | More frequency and experience with making presentations due to less scrutiny from outside "third" parties |
| More rotation of personnel and higher privacy concerns; less unity due to a system of checks and balances | Greater opportunity to build group identity, pride, and team spirit |

## Job Sector Competency Requirement Differences

In most competency clusters relevant to management jobs, differences between the public and private sector were found in the competency skill level demonstrated by managers. Table 2 presents a summary of these differences (and similarities), and indicates at what managerial level the competency is most important for superior performance. Definitions of the competencies appear in Appendix B.

**Table 2.—Job sector competency Requirements**

| Competency | Primary Level | Job Sector | |
|---|---|---|---|
| | | Public | Private |
| Goal and Action Management Cluster: | | | |
| Efficiency Orientation | Entry-Mid | 3 | 3R |
| Proactivity | All | 3 | 3R |
| Pattern Recognition | All | 3 | 3R |
| Concern for Impact | Mid-Exec | 3 | 3R |
| Leadership Cluster: | | | |
| Conceptualization | Mid-Exec | - | 3R |
| Oral Presentation | Mid-Exec | 3 | 3R |
| Self-Confidence | Mid-Exec | 3 | 3 |
| Logical Thinking | Entry-Mid | - | - |
| Human Resource Management Cluster: | | | |
| Managing Group Processes | Mid-Exec | 3 | 3R |
| Use of Socialized Power | Entry-Mid | 3 | 3 |
| Accurate Self-Assessment (threshold) | Entry | 3 | 3 |
| Positive Regard (threshold) | Mid | 3 | 3 |
| Focusing on Others: | | | |
| Perceptual Objectivity | Mid-Exec | 3 | 3 |

3 designates that the competency distinguishes between superior and average performance for the job sector

R designates the job sector with the higher demonstrated skill level

designates threshold competencies which are important for average performance, but do not contribute to superior or excellent performance.

## Goal and Action Management Cluster

The competencies within the Goal and Action Management cluster are associated with the manager's responsibility to make things happen toward a goal or consistent with a plan. In order to do this, managers must assume certain risks, have a clear image of a desired outcome, and understand when and how to take initiative. These managers are "movers and shakers," entrepreneurs; they tend to view themselves as players in a game. Events in life are viewed as opportunities to test themselves, take risks or accomplish something unique. Competencies which contribute to this cluster are efficiency orientation, proactivity, recognizing patterns, and concern with impacting others.

Managers in the private sector demonstrated more of each of the four competencies in the Goal and Action Management Cluster. These differences may be explained by examining differences in their job demands. For example, efficiency orientation is the concern with setting and accomplishing specific goals to improve performance, do things better. In the private sector, managers have access to and are

provided with information on various specific measures of performance. Marketing managers can assess market share; manufacturing managers can assess productivity as a function of costs and waste, etc. On the other hand, the nature of the work and the measures of performance used in the public sector do not allow for clear feedback to managers about performance. Parallel differences in these competencies were also found between levels in the organization, with the higher levels demonstrating less efficiency orientation than the lower levels. Again, these differences can be explained by the decreasing access to measures of individual performance at the upper levels and the increasing reliance on long-term organizational effectiveness.

The same difference in demonstrated levels of proactivity can be explained in the same manner: it is very likely that private sector managers have more opportunities to solve problems and take initiative which leads to change than do managers in the public sector.

Recognizing patterns is a way of thinking in which one identifies and recognizes patterns from an assortment of information, by bringing a concept to the situation and interpreting events through that concept. This capacity permits managers to figure things out through deductive and analytic processes. Differences in this skill level may be explained by the unintended consequences of policies and procedures which routinize the thought and performance processes required in the public sector.

Regarding concern for impacting others, it is speculated that managers in the private sector have more access to and flexibility in selecting and using symbols of power than do public sector managers. Public sector managers, therefore, would be less skilled at identifying ways to symbolically assert their status.

In summary, aspects of the private sector such as the establishment of clear goals and standards of excellence and performance provide the arena for goal setting, assessing return on investment, taking personal responsibility for the consequences of actions, and obtaining identifiable results from problem-solving activities. This in turn is reflected in the higher competency skill levels demonstrated by private sector managers.

## Leadership Cluster

The second cluster is called the Leadership cluster. These competencies are associated with the requirements of the manager to activate the human resources of the organization by stimulating their interest and involvement in the organization: by inspiring them. The manager is also often required to represent the organization to outside audiences such as community groups, professional societies, or financial institutions. To accomplish these duties successfully, the manager must confidently present ideas, beliefs, or goals that *others* find interesting or stimulating. This requires insight and the conceptual ability to identify market needs or articulate a statement of the strategic direction of the organization. Competencies which contribute to this cluster are self-confidence, oral presentation skills, logical thinking, and conceptualization.

Managers in the private sector demonstrated greater skill in two of the four competencies in the Leadership cluster, conceptualization and oral presentation skills. Again, the job demands regarding the variety of types and sources of information to which managers in the private sector are exposed and required to process can explain the higher conceptualization demonstrated by those managers. Also, the greater structure placed on the information provided to public sector managers in the forms of regulations and detailed policies and procedures may constrain the demonstration of this intellectual competency in the public sector. In fact, this is one of the few competencies included in the managerial profile that is not demonstrated in greater quantities by superior than by average mangers in the public sector. Similarly, lower level managers demonstrate less of this competency. Again, the complexity and diversity of the information required for processing in these management functions may account for these findings.

Regarding oral presentation skills, there is much greater scrutiny of and therefore greater risk associated with public speeches made by managers in public sector organizations. Consequently, these activities are constrained in the public sector and fewer opportunities are available for demonstrating one's skill. However, effective managers in the public sector demonstrated more use of oral presentation and self-confidence than their less effective peers.

## Human Resource Management Cluster

The Human Resource Management cluster is associated with the manager's ubiquitous need to work and interact with others, including peers, a board of directors, stockholders, and customers, as well as subordinates. At the most basic level, the manager is responsible for coordinating groups of people by promoting cooperative efforts, resolving conflicts, or stimulating pride in the organization. These responsibilities require that managers have positive expectations of others, in order to bring out the most in them, in addition to realistic views of themselves. Managers must build and use networks of coalitions to solve problems and stimulate cooperation. The competencies which contribute to this cluster are socialized power and influence, positive regard for others, managing group processes, and accurate self-assessment.

Of the competencies in the Human Resource Management cluster, only managing group processes was demonstrated to a greater degree by private sector managers. This difference suggests that private sector managers may have more opportunity to build work group identity, pride, and team spirit, and to stimulate collaboration within the work group. This may result from the frequent rotation of managerial personnel and the concern about maintaining a system of checks and balances through segmentation of public sector agencies and departments. For example, although it might be useful to create a multi-agency task force including specialists from the FBI, Treasury Department, military police, state police, and others to address the problem of urban homicide, it would probably violate the territory and jurisdiction policies and operating objectives of these organizations. In addition, the public sector requirements for privacy regarding personal information about individuals may prevent the level of group identification that is often established in the private sector. While these constraints are reasonable and appropriate, they do create unique demands for the public sector managers who must operate within them. Middle-level managers in the research demonstrated a greater skill level for managing group processes than other managerial levels.

The Focusing on Others cluster is discussed under competency similarities.

The above differences have been found to exist at significant or near-significant levels in the amount and skill levels demonstrated among managers. In every case, private sector managers demonstrated greater competency levels than did public sector managers. This consistent finding has been attributed mostly to differences in the information processing allowances and requirements of the two sectors. As illustrated, the greater standardization of information presented to and processed by managers in the public sector constrains their experience with conceptualization and recognizing patterns. The limited availability of specific measures of individual and group performance reduces the public sector manager's ability to practice and improve his or her skills in efficiency orientation. Finally, the limited discretion allowed to public sector managers in effecting change, speaking out on an individual basis, and selecting and developing their work teams may be associated with lower demonstrated levels of concern with impacting others, oral presentation skills, and managing group processes. The differences in job sector demands are reviewed in Table 3, along with the impact they have on individual competencies.



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**Table 3—Job sector demands**

| Public Sector | Private Sector | Competency Impacted |
|---|---|---|
| Greater functional integration; fewer "hard" measures of performance and productivity | Greater access to performance feedback and specific measures of productivity, i.e., profit, market share, scrap waste | Efficiency orientation<br>Proactivity<br>Pattern Recog. |
| Less opportunity for individual, unilateral change; more bureaucratic obstacles | Less formalization; more opportunity to establish goals and plans, and to solve problems | Proactivity<br>Conceptualization |
| More standard operating procedures and detailed policies and regulations; higher routinization | Fewer policies and standardized procedures; less routinization; greater need to make strategic decisions; access to a greater amount and variety of information | Pattern recog.<br>Conceptualization |
| Less opportunity to symbolically assert one's status | More access to symbols of power | Concern for impacting others |
| More constraints and greater organizational screening of oral presentations | Frequent presentations to multiple levels within organization | Oral presentation skills |
| More rotation of personnel and higher privacy concerns; less unity due to a system of checks and balances | Greater opportunity to build group identity, pride, and team spirit | Managing group processes |

## Competency Requirement Similarities

Several competencies within the Leadership and Focusing on Others clusters were demonstrated with equal importance (or lack of importance) in the private and public sectors.

### Leadership Cluster

Within the Leadership cluster, both self-confidence and logical thinking appear to be equally stimulated and demanded of public and private sector managers. Of these, only self-confidence distinguishes superior performance from average performance, particularly in executive level management positions, in both sectors. Apparently, the requirement to express that they know what they are doing with presence and decisiveness is required of high-level managers regardless of sector. It is possible that being in an executive position per se provides a person with a certain amount of prestige that contributes to an ability to inspire others. However, the fact that a strong relationship exists between *superior* performance and self-confidence in both sectors suggests that prestige derived solely from position is not enough to create this effect.

Logical thinking, on the other hand, functions as a threshold competency in both the private and public sectors. In both cases, no more of the competency is demonstrated by superior performers than by average performers.

### Human Resource Management Cluster

"Besides death and taxes, the other thing managers can be assured of is that they must work with people."[3] This fact accounts for the finding that most of the Human Resource Management cluster (with the exception of managing group processes) was demonstrated to the same degree by private and public sector managers. These competencies—socialized power and influence, positive regard for others, and accurate self-assessment—are manifested in a manager's use of alliances, networks, and teams to accomplish objectives at all levels of the organization. At higher levels, the manager must build relationships and garner the support required to push ideas and programs through the system. In relating to subordinates, the manager must have enough positive expectations of them to invest the developmental support necessary to achieve goals through others. Accurate self-assessment enables managers to surround themselves with the experts necessary to get the job done right, without attempting to do it all themselves. Although somewhat important overall, these competencies contribute primarily to the effectiveness of middle-level managers in both sectors. In addition, socialized power and influence was related to effectiveness among entry-level managers in both sectors.

### Focusing on Others Cluster

One competency within the Focusing on Others cluster is demonstrated to a greater degree by superior performers. This competency, perceptual objectivity, is equally demonstrated in the skill levels of private and public sector managers. Managers in both sectors are required to transcend personal bias and comprehend multiple perspectives simultaneously. These individuals effectively distance themselves from emotional involvement, thus making decisions and taking actions that are more successful for the organization. Differences in this competency were also found among managerial levels, with executives exhibiting greater skill at objectivity than other managers.

## Summary of Competency Differences and Similarities

For approximately half of the competencies within the general management competency profile, similar skill levels are demonstrated in the private and public sectors. As has been stated, these differences can be largely attributed to opportunities in the job to practice and experience these competencies, in accordance with the demands of the job. Three additional findings serve to support this thesis. First and most important, for almost every required (non-threshold) competency, although absolute differences may have been found in skill levels, *superior performers demonstrated more of the competency than their less effective counterparts in both the private and public sectors.* This means that particular individuals have a propensity for developing the competency in either environment and for finding ways to exhibit it. The absolute levels of the competencies parallel the demands made by the job and the context in which it exists.

A second interesting finding is that in most cases, public sector managers demonstrated higher levels of motivation toward the same competencies for which they demonstrated lower skill levels than their private sector counterparts.[4] Motivation level was measured using a projective testing procedure, which may be assumed to be less valid than behavioral measurement methods. However, the finding was so consistent across competencies, that other explanations may be derived. For example, according to Maslow's model of motivation, unfulfilled motivations continue to be expressed, whereas fulfilled motivations no longer serve to actively motivate a person. Using this theory, public sector managers working in environments where the demonstration of particular competencies, such as efficiency orientation, is constrained by the environmental demands, would continue to express high motivation for the competency.

The third finding is the relative size of the differences compared to inter-level differences and inter-industry differences. In every instance that a competency difference was found between the private and public sectors, similar differences were found between managerial levels and between industry or



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functional areas (e.g., personnel managers versus sales managers). In addition, differences were documented between levels and industry in the many cases where similarities between the private and public sectors were indicated. These findings provide evidence that the competency differences between the public and private sectors are not as difficult to overcome as they might at first appear.

## The Role of Specialized Knowledge

At this point the reader may be feeling uneasy with the glaring omission of specialized knowledge or a technical competency from the above discussion. In fact, specialized knowledge does play a role in most models of effective performance in managerial and science and engineering occupations. However, there are two consistent findings which support the exclusion of technical competencies as a primary requirement or point of focus. First, among the vast majority of studies conducted using competency assessment methods, superior performance was *not* related to possession of *more* facts and concepts than was average performance. In fact, not one of the 41 studies conducted on management jobs found that specialized or technical knowledge distinguished superior from average performance. It is possible that this finding is partially due to the methodology of competency assessment, which contrasts superior with average performers. On the other hand, this fact serves to make a point: technical competence is required only to the extent that it is a *threshold* competency. In order to enter jobs in managerial and science and engineering occupations, technical competence is required; once in the job, however, it no longer distinguishes between performance levels. In some cases, it actually interferes with the ability to focus on business objectives and relate to others in a non-technical manner.

The second point about specialized knowledge requirement is that when this is found as a competency, it usually takes the form of a qualification to the general technical profile expected of an individual in the given occupation. For example, for a group of engineers at a major manufacturing organization, when technical competence was demonstrated in the form of greater breadth or scope, as opposed to in-depth specialized knowledge, it was related to superior performance. In a large private sector research organization, communication of highly technical information in a way that was understandable to non-experts in and outside of the organization was associated with superior performance. Technical competence per se in these cases was considered necessary but insufficient as a qualification—a sort of "union card" for meeting minimum qualifications.

## Educational Implications for a Competency-Based Management Qualification Process

The previous sections summarized the competencies which are relevant to performance and effectiveness in managerial jobs. These findings suggest a number of implications for maximizing competence in managerial jobs and for transitioning managers across job level, sector, or industry.

An examination of the staff cutbacks occurring in the Department of Defense and the private sector defense industries reveals some interesting trends. Decisions regarding the elimination of individuals which are occurring as budgets for programs are reduced are rarely if ever based on competency, knowledge, or performance. In private industry these decisions are frequently made according to which programs are maintained in the wake of budget cutbacks. Individuals who are immersed in those programs are retained within the organization to reduce the costs of bringing new people up to speed on the program. The placement of these individuals onto these programs may have been the luck of the draw more than anything else, such as performance or potential.

Several factors in the public sector have resulted in staff reductions being based primarily on length of service in the organization or in the government. The public sector is particularly accountable for the enforcement of equal opportunity employment laws and rules and to the expectations of the public regarding the fair treatment of employee groups. In addition, agreements made with organized labor

groups tend to reflect mistrust of retention systems based on performance and typically demand the application of seniority-based systems. Again, the relationship between this decision-making process and performance or competency is likely to be very small.

The implication of this information is that many competent people will be available for employment in the job market from both the private and the public sectors. These individuals will possess different types and levels of knowledge, skills, experience, and competencies. Unfortunately, it is likely that their potential for success in specific positions would only be measured in terms of their formal training or work experience to the extent that it matches other jobs according to sector or job level. As discussed in this paper, however, performance potential may have more to do with the possession of relevant job competencies than with educational credentials or specific job experience. Many individuals can therefore make successful transitions across job function, level, or sector, if competency criteria are included in the decision-making process.

Adjustments in the demonstration of competencies required as one moves from job to job, industry to industry, or public to private sector, however, are more than will occur simply because someone is handed a new job description. Further, traditional education in management rarely reflects differences in the industry, job level, or sector objectives. An alternative approach is to use competency-based training programs, with knowledge-based educational programs as a foundation, to train, develop, and transition managers across jobs.

The theory and methods of applying competency-based training is more complex than are knowledge-based training approaches. It requires a multi-method approach, incorporating several processes dependent on the nature of the competency and the particular individual. The general steps for developing competency-based training for manager competencies are presented in Table 4, and discussed in further detail in the paragraphs that follow.

**Table 4.—Competency-based training process**

| |
|---|
| 1. Conduct a competency needs assessment |
| 2. Determine the trainability of needed competencies |
| 3. Identify the needed methods and exercises for training |
| 4. Implement competency acquisition |
| 5. Reinforce the learning cycle |

## Step 1. Competency Needs Assessment

The competency "gaps" of managers transitioning from the public sector to the private sector have been presented in earlier sections of this paper. Competencies represented in Table 2 as important to managerial performance, and demonstrated at higher skill levels in the private sector, are included. These serve as the basis of the training needs assessment.

## Step 2. Determine the Trainability of Needed Competencies

Competencies differ in the degree to which they are integrated into the stable and enduring make-up of the individual who possesses them. Factors such as the time in life when the competency is acquired, the degree of reinforcement it received, the possession of other competencies or characteristics, or the degree to which a genetic component is involved with creating boundaries around an individual's ability to possess the competency all contribute to a competency's trainability.

Virtually all competencies can be *enhanced* through the processes discussed below. However, some are easier to upgrade than others, and therefore the recommended methods for addressing them must vary with the competency's trainability. Although some of the factors affecting trainability are dependent on the particular individual involved, the average trainability for the competencies in the general manager model which are demonstrated at lower skill levels by public sector managers are presented in Table 5.

**Table 5.—Competency trainability***

| High | Moderate | Low |
|---|---|---|
| Efficiency Orientation<br>Concern with Impact<br>Oral Presentations | Proactivity<br>Managing Group Processes | Pattern Recognition<br>Conceptualization |

* Includes competencies where skill level is higher in the private sector

High-trainability competencies are easier to train in most people because they require less relearning and are less restricted by organic (i.e., genetic, biochemical) characteristics of the person, and lower level training methods (discussed in greater detail in the next section) can be used for successful training in most cases. On the other end of the spectrum, low-trainability competencies are difficult to train to a substantial degree in most people and will require higher level training methods in addition to lower level training methods.

## Step 3. Identify the Needed Methods and Exercises for Training

Table 6 presents several general training methods which may be applied for competencies ranging from high- to low-trainability.


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High-trainability competencies can be learned/developed by using training methods that are primarily of shorter duration and primarily knowledge-based. This means that "what," "why," and "how to" can be effectively conveyed through lectures, videos, and books in a structured format. Moderate-trainability competencies require a certain amount of relearning, which by definition requires the active involvement of the individual in discussions, role-play, and self-awareness activities. Low-trainability competencies require long-term training/development processes that include observational, modeling, practice, and reinforcement activities. These require very active involvement of the individual in the relevant applied setting or context. Associated with each training method are steps which must be taken to acquire and integrate the competency. These steps are discussed in the following paragraphs.

**Table 6.—Training methods**

| Trainability | Method | Example Excercises |
|---|---|---|
| High | Formal Classroom | Lectures, Video, Knowledge Acquisition |
| High/Moderate | Self-Awareness | Questionnaires, Self-Observation |
| Moderate | Formal Hands-On | Case Studies, Work-Related Exercises |
| Low | Coaching/Mentoring | Observation, Discussion, OJT |
| Low | Career Pathing | Job Assignments, Mentoring, Self-Awareness, Knowledge Acquisition |

## Step 4. Implement Competency Acquisition

To acquire competency to the point at which it will substantively enhance job performance, each of the learning stages in Table 7 must be completed at some time. All five stages can be completed during the "formal" training process (required for low-trainability competencies) or afterward, for training/developing high-trainability competencies.

These five essential stages reflect the basic human learning process when cognitive and voluntary action components are involved. Many training programs do not allocate sufficient time to the last two or three stages, which prevents them from generalizing successfully the applied context (especially when the focus is a low-trainability competency).

**Table 7.—Competency acquisition stages**

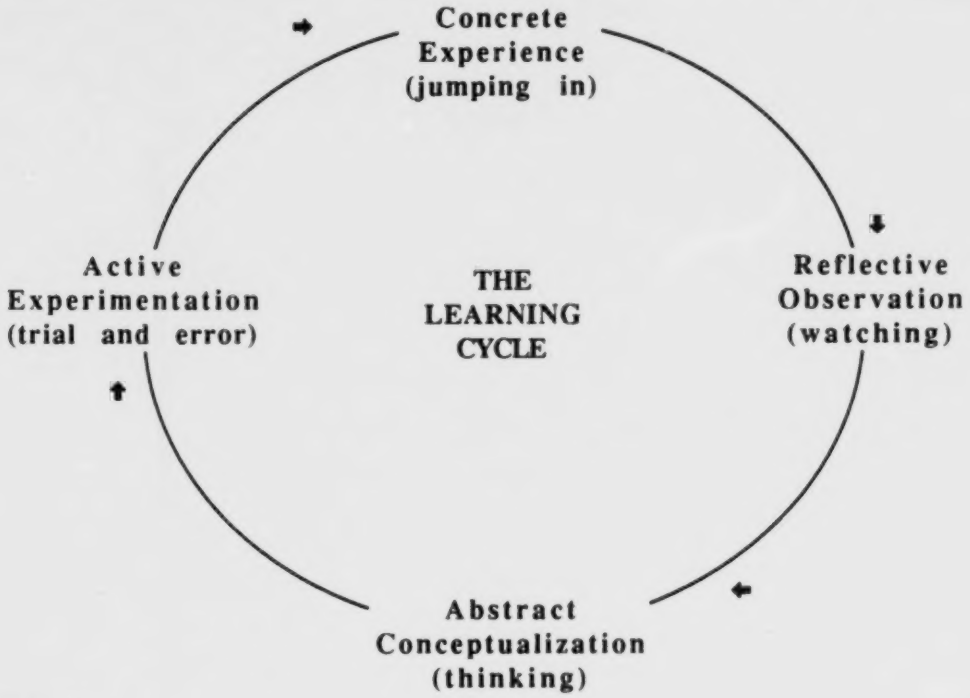
| | |
|---|---|
| 1. RECOGNITION | Identify competencies; see their importance for the job. |
| 2. UNDERSTANDING | Learn the competency definitions; be able to explain them in your own experience. |
| 3. SELF-ASSESSMENT | Assess own use of the competencies. |
| 4. PRACTICE | Practice the competencies; aim for superstar performance. |
| 5. APPLICATION ON THE JOB | (1) Select competencies for use on the job; (2) set goals; (3) plan actions. |

## Step 5. Reinforce the Learning Cycle

As we have seen, learning complex new behaviors and integrating them into an existing network of experiences, beliefs, values, and behavior patterns requires a lot of hard work. One last challenge in this process is to keep the individual from reverting to old, well-conditioned behaviors, a process frequently referred to as "spontaneous recovery."[3]

A cycle of learning and reinforcement is presented in Figure 5. Essentially, by repeating the competency acquisition steps in a cyclical manner as recommended, learned behavior is retained at a much higher level. Specifically, using all four learning modes increases learning retention from 10 percent to 90 percent. Effective competency-based training includes all four modes of the cycle.

**Figure 5.—The learning cycle**




## Conclusion

Competency-based training and development programs such as those discussed have been used primarily by individual organizations, and this trend is growing. For example, a large industry-based research consortium is currently in the process of developing competency-based training and development systems for developing industry-wide career paths. These movements should serve as models for other organizations, industries, government agencies, and the nation's educational institutions.

Management jobs vary with regard to the specific job demands and the organizational and environmental conditions in which they exist. Management jobs also share certain responsibilities, including the familiar duties of planning, organizing, controlling, motivating, and coordinating. By equipping managers (and future managers) with the competencies necessary to successfully apply the technical knowledge, skills, and abilities required to perform their jobs, we will be supplying our nation with *adaptable* employees. This single characteristic may very well be the most important one for a whole generation of employees and organizations, in our private and public sectors alike.

# Notes

[1]. R. E. Boyatzis, *The Competent Manager* (New York: John Wiley & Sons, 1982).

[2]. Ibid.

[3]. Ibid.

[4]. Ibid.

[5]. J. Kagen & E. Haveman, *Psychology: An Introduction*, 2nd ed. (New York: Harcourt Brace Jovanovich, 1972).



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# Appendix A

## Job Competency Assessment Methodology

The following steps comprise the essential components of the Job Competency Assessment (JCA) methodology:

1) *Identifying, through expert panels, those characteristics that superior performers use to make themselves highly successful.* After an introduction to the purpose of the project and the JCA approach, panel facilitators lead in-depth discussions and brainstorming sessions in a structured but open format. The primary purpose of the panels is to define the major accountabilities and responsibilities of the target positions, and to "nominate" competencies which appear to distinguish superior and threshold performance. These panels also outline the important responsibilities, accountabilities, and potential or real obstacles to high-level performance and compare the personal characteristics of threshold and superior performers.

2) *Administering a questionnaire asking for the job competencies which are more characteristic of superior performers than average performers with whom the respondent is familiar.* This inventory consists of a "dictionary" of competencies created from hundreds of JCA studies in management jobs.

3) *Conducting in-depth interviews, called Behavioral Event Interviews (BEIs), with a sample of superior job incumbents and a sample of average job incumbents.* The BEI uses a structured but nondirective format. First, participants are asked to select an actual workplace situation or event that was either a particularly "high" point for them—when they were especially pleased with the way things went or the way things turned out—or a particularly "low" point for them—when things did not go well or turn out well for them. This mode of questioning does not lead the interviewee by defining what aspects of the job are important, but rather obtains information that is *important to them.* "Low" point events are important in that they identify competencies, such as tenacity, that are most often necessary in difficult situations. Second, the BEI requests information about thoughts and feelings, in addition to observable behavior and actions. This allows the motives, values, and cognitive skills to be identified as well.

Once a situation or event is in focus, the interviewer asks the participant to describe the entire event in great detail, specifically responding to these questions:

- *What* led up to the situation? *Who* was involved?
- What did you *do*?
- What did you *think, feel*?
- What did you *say*?
- What was the *outcome* of the situation?

Three to five situations are described in the interview. Interviews are tape recorded with the knowledge and approval of the participants, and transcribed and coded for analysis.



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4) *Consolidating this information into a competency model, which describes the characteristics that distinguish the superior performers from others.* A complex iteration process is used by the research team to identify overlapping themes and to incorporate competencies and behavioral indicators into the model from all data sources. Competencies with evidence of consistent value in all functional areas are included in the competency model.

Job Competency Assessment grew out of the research and applied methods of noted psychologist David McClelland on motive profiles. His early method of motivation assessment, called "Content Analysis of Verbal Expression," combined with decades of empirical research on the relationship of motives (such as the need for achievement and need for power) to productivity levels, led to this applied method of individual and organizational assessment. In the three decades since, Dr. McClelland's company, McBer & Company (a member of the Hay Group), has developed competency models of literally thousands of jobs in hundreds of organizations.

# APPENDIX B

## Manager Competency Definitions

1. Goal and Action Management Cluster

   a. Efficiency Orientation
      - Finds better, faster, less expensive, or more efficient ways to do things.
      - Uses own time and resources efficiently (e.g., time management methods).

   b. Proactivity
      - Does things before being asked to or forced by events.
      - Does far more than is minimally required in the assignment or task.
      - Does things that go beyond the job description or beyond formal authority.

   c. Pattern Recognition
      - Sees connections or patterns that are not obvious to others.
      - Sees similarities between a new situation and past situations of a different type.
      - Rapidly identifies key issues in a complex situation.
      - Finds ways to condense a large amount of information into a useful form.
      - Develops and uses vigorous, clear analogies in speech or writing.

   d. Concern for Impact (CI)
      - Understands how he or she is perceived by others.
      - Works to make a particular impression on others, to help achieve a work-related objective.
      - Makes the organization aware of his or her accomplishments and capabilities.
      - Modifies own behavior to fit the expectations of others.
      - Takes actions calculated to have a particular effect on others.

2. Leadership Cluster

   a. Conceptualization
      - Uses "rules of thumb" concepts or principles to describe problems and situations.
      - Identifies inconsistencies or discrepancies that are not obvious to others (actual/ideal or error discrepancies).
      - Notices similarities between new situations and past situations of the same type.
      - Applies information and knowledge previously learned from training or others.

   b. Oral Presentations
      - Uses information or data effectively to persuade others or to support a position.
      - Explains complex ideas by using well-chosen examples from personal experience.
      - Prepares for presentations with documentation, facts, and figures.
      - Anticipates and prepares for how people will react.
      - Tailors own language to the level of the audience.
      - Makes a special effort to relate to people at their level of understanding.
      - Uses symbolic, verbal, and nonverbal behavior to ensure clear presentations.



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c. Self-Confidence (SCF)
   - Sees self as among the best or most capable in this job.
   - Approaches new challenges with a confident "can-do" attitude.
   - Presents self crisply, forcefully, and impressively.
   - Expresses confidence about own interpretation or viewpoint.
   - Offers suggestions to superiors; challenges or questions actions of superior or customer.
   - Accepts full responsibility when things go wrong.

d. Logical Thinking
   - Analyzes situations logically, to identify causes.
   - Draws logical conclusions.
   - Thinks of several possible explanations for a situation.
   - Sees the implications of events or information.
   - Undertakes a complex task by breaking it down into manageable parts in a systematic, detailed way: forms and tests hypotheses; arranges and presents large amounts of information in a clear, concise, step-by-step manner.

3. Human Resource Management Cluster

a. Managing Group Processes
   - Keeps people informed, clear, and up to date.
   - Involves others in issues that may affect them.
   - Ensures that members of a group contribute to a process; encourages initiative.
   - Solicits the input of others who are affected by planned activities.
   - Gives credit or recognition to others who have contributed to a project's success; shows respect for others' expertise.
   - Demonstrates concern for treating people fairly and equitably.
   - Demonstrates group process skills.

b. Use of Socialized Power
   - Develops and uses subtle strategies to influence others.
   - Does things to make others feel ownership in his or her own solutions or proposals.
   - Uses experts or third parties to influence.
   - Selects and screens the information to be given to others.
   - Develops and uses networks of contracts.
   - Offers trade-offs to others to get their cooperation or support.

c. Accurate Self-Assessment (ASA)
   - Learns from own experience and mistakes.
   - Recognizes own limits and seeks assistance.

d. Positive Regard
   - Expresses positive expectations of others—believes others want to do their best and make a contribution to the organization.

4. Focussing on Others Cluster

a. Perceptual Objectivity
   - Removes personal biases from his or her views.
   - Comprehends multiple perspectives simultaneously.
   - Distances himself or herself from emotional involvement in decisions.


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# Lessons from the Past: Mitigating the Effects of Military Cutbacks on Defense Workers

Lois Lembo and Judith Philipson

## Introduction

The U.S. defense establishment is in a period of transition as it closes down one of the longest peacetime military buildups in history. The reduction of tensions between the United States and the Soviet Union and the blossoming of democracy in Eastern Europe have led to the significant reduction of a threat that had sustained relatively high levels of peacetime defense spending and troop deployments for nearly half a century. With a burgeoning budget deficit and a long-neglected list of other national priorities, the nation has been quick to respond to the "outbreak of peace." The steady growth of defense spending experienced by this nation over the past decade ended in the second half of the 1980s, and defense spending cutbacks—whatever course they ultimately may take—will ripple throughout all areas of our economy.

Even Desert Shield operations are likely to have little mitigating impact on the economic adjustment. First, a large percentage of the additional expenditures associated with Desert Shield will be for operational and consumption items (e.g., food and other support items, transportation costs, personnel expense, spare parts, and selected munitions). The long-term domestic economic impact of these expenditures is likely to be minimal. Moreover, even to the extent that these expenditures do result in maintaining force structure, research and development, procurement, and military installations at higher-than-projected levels, these are likely to be of limited duration. These activities do not appear likely to pose a long-term "threat" significant enough to reverse what is currently considered a long-term, continuing decline in military spending.

Although the magnitude of any economic problems caused by the cutbacks may not be as severe as originally envisioned, defense policy decisions will no doubt increase unemployment in many areas. At a minimum, once the current crisis is over, the near-term impacts of reduced defense spending will include the following:

- *Reductions in the numbers of uniformed military personnel through early retirement and separation as well as reduced recruitment.* The U.S. Army estimates that it could cut 250,000 soldiers by the mid-1990s; other estimates cite a total reduction of 400,000 military personnel.[1] Most of these individuals will enter the work force just as defense industries are downsizing to meet reduced levels of demand and other segments of the economy are struggling against increased foreign competition and a general economic slowdown
- *Closure and consolidation of some military bases, with corresponding reductions in the federal civilian and support contractor workforce.* Base closures have also been found to have "trickle

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Note: Lois Lembo is manager of industry strategy and analysis at TASC, Arlington, Va. Judith Philipson is a market analyst at TASC.

down" impacts on local economies that are highly dependent on existing defense installations for their economic survival

- *Reductions in military contract spending on weapons acquisition, with corresponding reductions in the workforce of selected defense prime contractors, subcontractors, vendors, and government arsenals, depots, and laboratories.* Layoffs by a number of major defense contractors have already begun, and additional firms are expected to take similar action in the days ahead. For example, the trade magazine *Aviation Week and Space Technology* (September 10, 1990) reports that 45,000 aerospace jobs had been targeted for elimination in the next 18 months, and that an additional 90,000-135,000 jobs in the vendor base could be lost as a result of cutbacks in prime contracts. Most of these jobs are expected to be in manufacturing. Already, McDonnell Douglas has eliminated 14,000-17,000 jobs due to poor financial performance; General Dynamics laid off 1,150 personnel this year due to cancellations; and Northrop has reduced its workforce by about 3,000 to accommodate changes in the B-2 program.

It is clear that careful planning and innovative programs will be required to meet the needs of these three populations as they transition to new jobs. Many of the problems that these individuals will face during the dislocation can be ameliorated by effective education and training programs—which may extend beyond those that are available today—as well as by other human resource measures that promote reemployment.

The purpose of this paper is to provide a brief review of U.S. experience with retraining and reemployment of defense workers during three periods when the Department of Defense (DoD) budget was reduced significantly. The first of these is the extensive demobilization of military forces in the late 1940s following the end of World War II; the second involves the reemployment of workers after the termination of hostilities in Korea in the mid-1950s; and the third addresses defense and aerospace spending cutbacks in the early- and mid-1970s due to the winding down of hostilities in Vietnam and the post-Apollo spending cuts at NASA. Research shows little documentation of substantial and directed efforts toward retraining and reeducating of displaced defense workers. However, there are other facets of the experiences from which one can draw important lessons.

In deriving lessons learned from these experiences, the paper addresses the degree of economic dislocations caused by reduced defense spending; the amount and effectiveness of advance planning for spending and employment cutbacks undertaken by DoD, other government agencies, and the private sector; and the role of retraining in past reemployment efforts. In the final section, the paper presents summary conclusions on the applicability of past experience to problems facing defense workers today. It also identifies the policy issues that are raised by the impending reduction of the nation's defense industry.

# Background

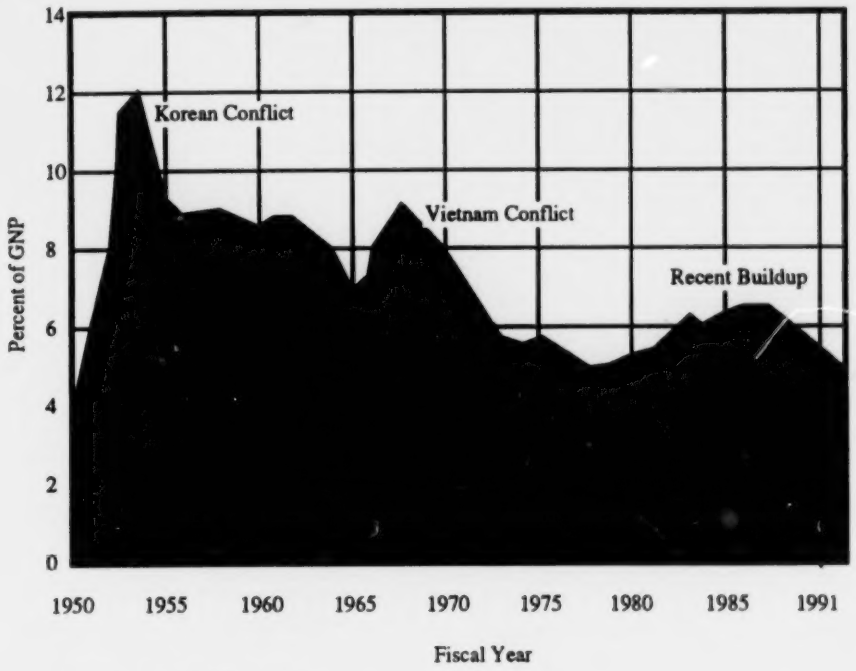
Before describing the lessons learned from past experiences, it is important to understand the nature of today's defense industry and the characteristics of the workers who are likely to be affected by the planned cutbacks.

## What Was the Extent of the Most Recent Defense Buildup?

Although the defense buildup was considered to be a major one, it was significantly smaller (in terms of its national economic impact) than those occurring during past wartime periods, and most analysts agree that economic dislocations from the resulting drawdown will therefore be less severe. At the peak of the buildup, defense spending rose to roughly the same levels reached at the peak of both the Korean War (1953) and the Vietnam War (1968). However, the present-day defense budget represents a much smaller share of GNP and a much more modest component of the national budget than was attained

during the previous periods. At the height of the most recent buildup, defense spending accounted for about 28 percent of the federal budget. In comparison, the defense share of the budget at the peak of the Korean War was almost 70 percent of the budget and the Vietnam War peak reached 46 percent.[2] Figure 1 shows the trends in defense spending during the peak years of past buildups.

**Figure 1.—Defense outlays as a share of the gross national product**




Source: Secretary of Defense
Annual Report to the Congress, 1990

Of particular importance from an economic perspective is the composition of the military budget, which is divided among operations and maintenance, procurement, military personnel, and research, development, testing, and evaluation accounts. During the last decade's growth in defense spending, a large proportion of defense dollars were allocated to procurement—hard goods, services, and other items produced by industry. Procurement spending (in constant dollars) more than doubled between the late 1970s and the late 1980s.[3] This spending quickly built up the defense operations of domestic firms and swelled the demand for manpower within defense-related industries.

Although it is inevitable that cutbacks will occur, the debate on the Fiscal Year 1991 budget left unresolved many important decisions about the size and shape of future DoD budgets. In addition to uncertainty surrounding the magnitude of the cutback, the reemployment opportunities facing laid-off defense workers will be molded by decisions on the overall course of the federal budget. Since the key factors affecting reemployment are the state of the nation's economy and the workers' ability to transition to new jobs in the commercial sector, much will depend on the size and distribution of any "peace dividend" that is realized. Among the possibilities are the reallocation of funds from defense to other areas of federal spending. This could, for example, involve a decision to increase infrastructure funding to make up for many years of neglect. This option would not necessarily lead to economic growth but would facilitate the transfer of unskilled and lower-skilled defense workers to jobs in firms that are the new beneficiaries of federal non-defense spending. (Spending on deferred public works projects served as an important countercyclical stimulus during the post-World War II and Korea build-downs for



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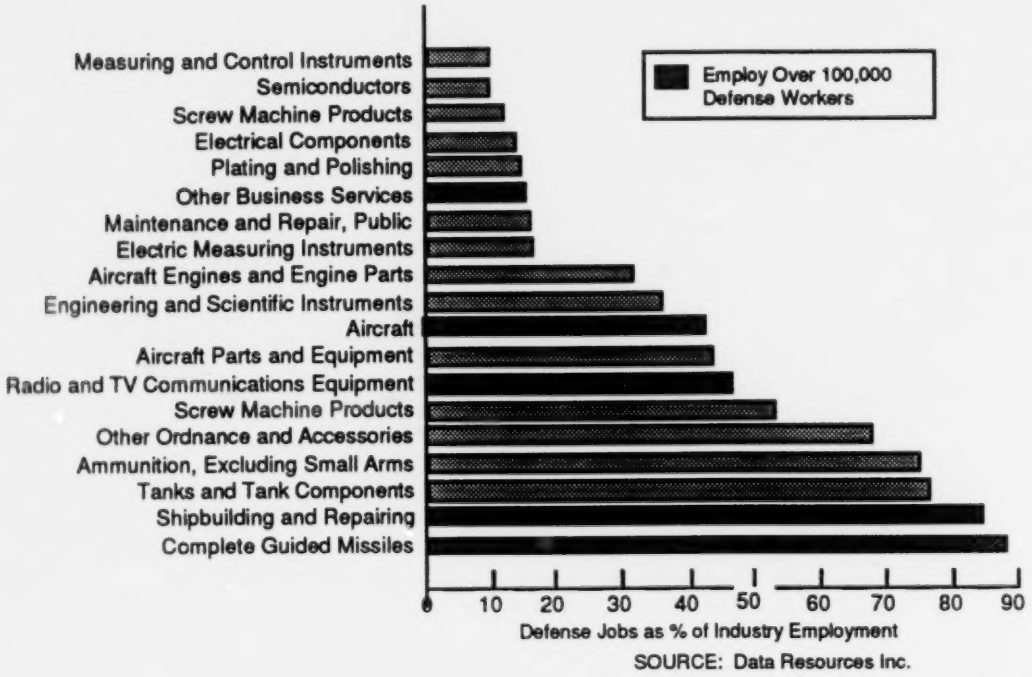
returning unskilled military workers.) Alternatively, the defense funds could be used to reduce the deficit. Although this would offer long-term benefits to the economy, this option is unlikely to result in a growth of near-term employment opportunities for laid-off defense workers or returning soldiers.

## What Industries Produce for Defense?

Most domestic industries produce for both military and commercial customers, and the work performed in these two market segments is sometimes not easily differentiated. This is particularly true of suppliers and vendors to the large prime contractors, for whom defense is a relatively small part of their total market. Nevertheless, a large proportion of DoD's dollars are allocated to relatively few industrial sectors that dedicate a major portion of their work to defense. In fact, more than half of the private sector defense jobs are in only 11 industrial sectors.[4] Figure 2 lists industries that allocate 10 percent or more of their jobs to defense. As the figure shows, some of these industries—such as shipbuilding, guided missiles, tanks, and ammunition—perform nearly all of their work for defense-related customers. Although defense cutbacks will affect a large number of sectors of the economy, the most dramatic impact will be on those industries that concentrate heavily on the production of military goods. Often, the skills and "ways of doing business" that are required in these defense-intensive industries are not easily transferable to the commercial sector. In other "high-tech" areas like electronics, however, commercial demand could be expected to reduce the impact of defense cutbacks and worker skills could be readily transferable to the new market.

**Figure 2.—Concentration of defense employment**



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## What Are the Occupations of Defense Workers?

In 1988, there were a total of about 3,400,000 workers in private sector defense-related jobs. This constitutes about 50 percent of the total defense workforce (which also includes active duty military personnel and DoD civilian employees) and approximately 3 percent of the nation's total workforce.[5] Within these defense industries, employment is concentrated in a relatively small number of skill categories, including engineering, the sciences, and a broad number of mechanical and manufacturing disciplines. Table 1 lists the numbers of defense workers in major occupational specialties. These workers tend to be much more highly specialized and highly paid than their commercial counterparts. This salary differential has been a major impediment to the reemployment of defense workers during past retrenchments, since defense workers are unwilling to accept the lower salaries that are earned in commercial work. The transition of specialized defense workers to new jobs has a downside for the economy as well. Skilled defense workers constitute an important national asset that cannot easily be replaced once skills are lost or dispersed across industry. This is particularly true in technically complex or highly advanced areas, such as optics.

## Where Are Defense Industries Located?

A final characteristic of defense employment is its regional distribution. Although defense jobs are spread throughout the nation, most are concentrated in relatively few states, which focuses any dislocations associated with defense cutbacks as well as government and private sector efforts to facilitate reemployment. Nearly 60 percent of private sector and government defense jobs are located in only 10 states. These include California (18.9 percent of all defense jobs), Texas (6.3 percent), Virginia (5.9 percent), New York (5.6 percent), Florida (4.4 percent), Massachusetts (3.8 percent), Ohio (3.7 percent), Pennsylvania (3.7 percent), Maryland (3.1 percent), and Washington (2.9 percent). In contrast, 22 states each have less than 1 percent of the jobs created by DoD and will be relatively unaffected by the decision to shift expenditures from defense.[6]

Thus, the reduction in defense expenditures can be expected to affect a wide distribution of workers. For the past decade, high levels of defense spending have been a fact of life. They are a fact of life no more. Although the dislocation will not be as large over the short term as that experienced during previous contractions, a large number of workers—perhaps hundreds of thousands over several years—will lose their jobs and seek work at a time when general economic conditions are at a downturn. Despite the pervasiveness of defense production, which touches nearly all industries, occupations, and states, some groups and locations will experience greater dislocations than others because of a high degree of defense dependency and a limited capability to apply specialized skills to nondefense enterprises. Among the industries that will be hardest hit are guided missiles, shipbuilding, tanks, ammunition, and aerospace. Most of the laid-off workers will be in manufacturing-related occupations—predominantly engineers; craft and related workers such as aircraft mechanics, machinists, inspectors and testers; and operatives, the skilled workers who actually produce and assemble defense products. The geographical area that will be hardest hit is California (which suffered a similar downturn in the early 1970s), but the impact will be felt from Texas to manufacturing centers in the Midwest and to the Eastern Seaboard.

History shows that the effects of defense cutbacks are more dependent upon the state of the economy and other external factors than the sheer number of workers affected. These past experiences are not directly analogous to today, but they do provide insight into how the negative impacts of cutbacks on workers and their communities can be minimized. Some of the lessons learned from the past are described in the sections that follow.

**Table 1.—Defense-related employment in occupations having 10 percent or more of all jobs associated with defense expenditures**

| Occupation | Defense Related Employment (in 000s) | Defense Jobs as a % of Occupational Employment |
|---|---|---|
| Aero-astronautic engineers | 20,967 | 36.901 |
| Electrical engineers | 92,544 | 19.209 |
| Industrial engineers | 21,980 | 15.993 |
| Mechanical engineers | 40,034 | 14.811 |
| Metallurgical engineers | 3,388 | 16.333 |
| All other engineers | 58,727 | 18.893 |
| All engineers | 261,753 | 16.904 |
| Physicists | 4,561 | 23.596 |
| Mathematicians & statisticians | 5,157 | 10.913 |
| All scientists | 23,167 | 6.733 |
| Electrical & electronic technicians | 52,457 | 10.315 |
| Mechanical engineering technicians | 10,252 | 16.089 |
| All engineering & science technicians | 50,886 | 9.682 |
| Computer systems analysts | 39,627 | 9.695 |
| All computer specialists | 70,582 | 8.232 |
| Aircraft mechanics | 35,522 | 30.421 |
| Marine mechanics and repairers | 2,058 | 22.362 |
| Machinists | 35,397 | 9.870 |
| Tool & die makers | 19,220 | 11.665 |
| Metalworking craft workers, nec | 8,349 | 14.002 |
| Inspectors & testers | 75,172 | 10.742 |
| Shipfitters | 6,835 | 53.435 |
| All craft & related workers | 701,614 | 5.882 |
| Aircraft structure & surface assemblers | 9,959 | 45.621 |
| Electrical & electronic assemblers | 78,330 | 17.845 |
| Electro-mechanical equipment assemblers | 9,225 | 15.213 |
| Drill press & boring machine operators | 6,904 | 11.325 |
| Electroplaters | 5,582 | 11.679 |
| Grinding & abrading machine operators | 9,394 | 10.531 |
| Lathe machine operators | 12,094 | 12.855 |
| Machine tool operators, comb. | 24,966 | 21.968 |
| Machine tool oper., numerical control | 9,767 | 15.837 |
| Machine tool operators, tool room | 18,425 | 10.341 |
| Milling & planing machine operators | 6,717 | 19.928 |
| Power brake & bending machine operators | 17 | 13.744 |
| Winding operators, nec | 5,444 | 15.082 |
| All operatives | 695,924 | 5.604 |

nec = not elsewhere classified
Source: Data Resources, Inc.


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# World War II

The U.S. mobilization to prepare for and fight World War II was the largest and most significant dislocation of the economy in U.S. history. From a level of 300,000 in April 1940, the Armed Forces grew forty-fold to a level of 12.1 million five years later.[7] The mobilization of industry rivaled the manpower mobilization in size and effectiveness; the output of war materiel was nothing short of phenomenal. From the May 1940 fall of France until Japan's surrender in August 1945, U.S. industry met the materiel needs of its own vastly expanded Armed Forces and a substantial portion of Allied needs as well. By today's standards, the levels of production were nearly inconceivable: 86,000 tanks, 296,000 airplanes, 15 million small arms, more than 40 billion bullets, and 64,000 landing craft.[8] Even Josef Stalin, never modest about claiming credit for Soviet triumphs and sacrifices in World War II, gave the effort of U.S. industry a substantial share of the credit for defeating the Axis powers.

Table 2 shows the impact of the war on the U.S. workforce. Significantly, while the Armed Forces expanded enormously, this expansion did not occur at the net expense of the civilian workforce until the very end of the war. Instead, for the first three years of the buildup, the net expansion came from two sources: a major reduction in unemployment (providing 7.3 million net additional employed workers between April 1940 and September 1943) and an overall growth in the size of the labor force (accounting for 10.6 million new workers in the same period, primarily women entering the workforce for the first time). This net addition of 17.9 million workers to the effective labor force permitted the maintenance or expansion of civilian sectors, while building up the Armed Forces. (No sectors except "unemployed" and "other" declined in total employment between the base period and September 1943.) This expansion of the labor force was an immediate and growing concern of economic planners, businesses, and labor unions, raising issues of massive growth in unemployment after the war's end and a return to the high-unemployment rates of the early 1930s. These outcomes were to be avoided at all costs.

**Table 2.—Impact of World War II on national workforce**

| | Apr 1940 | Sept 1940 | Sept 1941 | Sept 1942 | Sept 1943 | Sept 1944 | Apr 1945 | July 1945 |
|---|---|---|---|---|---|---|---|---|
| Total labor force, including Armed Forces.. | 55.1 | 56.8 | 58.8 | 6.1 | 65.7 | 66.8 | 66.3 | 67.5 |
| Armed Forces | .3 | .5 | 1.8 | 4.6 | 9.7 | 11.7 | 12.1 | 12.1 |
| Civilian labor force | 54.8 | 56.3 | 57.0 | 56.5 | 56.0 | 55.1 | 54.2 | 55.4 |
| Unemployment | 8.2 | 6.8 | 4.7 | 1.7 | .9 | .6 | .5 | 1.0 |
| Employment | 46.6 | 49.5 | 52.3 | 54.8 | 55.1 | 54.5 | 53.7 | 54.4 |
| Agricultural | 9.4 | 10.8 | 9.9 | 9.5 | 10.0 | 9.7 | 8.7 | 9.9 |
| Non agricultural | 37.2 | 38.7 | 42.4 | 45.3 | 45.1 | 44.8 | 45.0 | 44.5 |
| Munitions industries | 4.2 | 4.7 | 6.5 | 8.8 | 10.9 | 10.2 | 10.1 | 9.2 |
| Other manufacturing | 6.2 | 6.6 | 7.5 | 7.4 | 7.2 | 7.0 | 6.9 | 6.9 |
| Federal war agencies | .1 | .1 | .4 | 1.1 | 1.6 | 1.7 | 1.7 | 1.6 |
| Other government | 3.9 | 4.0 | 4.2 | 4.3 | 4.0 | 4.0 | 4.0 | 4.0 |
| Transportation and public utilities.. | 2.9 | 3.1 | 3.4 | 3.5 | 3.7 | 3.8 | 3.8 | 3.9 |
| Construction | 1.1 | 1.5 | 2.0 | 2.5 | 1.5 | 1.1 | 1.1 | 1.2 |
| Mining | .9 | .9 | 1.0 | 1.0 | .9 | .9 | .8 | .8 |
| Trade and service | 11.6 | 12.0 | 12.9 | 12.6 | 12.5 | 12.6 | 12.6 | 12.8 |
| Other | 6.2 | 5.7 | 4.5 | 4.1 | 2.8 | 3.4 | 4.1 | 4.1 |

Source: Prepared by U.S. Department of Labor, Bureau of Labor Statistics, as cited in U.S. Congress, Legislative Reference Service, *op. cit.*, p. 211.

Instead of this dire scenario, the sudden demobilization at the end of World War II and return to the labor force of the vast majority of the military forces in the year following the war set off an unprecedented period of economic prosperity. Many fortuitous economic circumstances contributed to this virtually painless transition from a "guns" to a "butter" economy, some of them more or less unique to

that time period. The driving factor was the pent up demand in the civil sector—caused by high employment combined with rationing and lack of civilian goods during the war. One very significant influence was the fact that, by the end of the war, severe labor shortages had begun to appear throughout the economy. This "capped" economic expansion at lower levels than it might otherwise have achieved, created continuing demand for new workers, and pulled into manufacturing jobs large numbers of temporary workers (e.g., housewives, older workers, students, and aliens) who could be easily and relatively painlessly displaced when war contracts ended or soldiers returned to reclaim the jobs.

The nation also ended the war financially, emotionally, and practically prepared for a "spending spree." While employment had increased significantly and the average work week had been extended from 38 to 45 hours,[9] it had become much more difficult throughout the war for newly prosperous workers to find anything to spend their money on. Beginning in March 1941, with a restriction on nonessential uses of aluminum, the federal government had systematically suppressed "nonessential" economic activities, including:

- Nonessential building and construction was restricted in September 1941.
- Steel plants were put under complete allocations (to supply only essential activities) in November 1941.
- Tire rationing was instituted in January 1942, the same month that production of cars and light trucks was prohibited.
- Production of refrigerators was stopped in February 1942.
- Nationwide food rationing began in April 1943.[10]

Many other routinely available consumer goods could simply not be bought at any price during the war. The result of high employment, high wages, and lack of available consumer goods was predictable. Perrett notes the following economic conditions at the close of World War II:

> America had become a middle-class country . . . . Average income was almost $3,000 a year, more than twice what it had been in 1939. The gross national product had gone from $90 billion then to $213 billion now. Most of the increase went into wages and salaries. Given a chance to spend it, people did. Expenditures on personal consumption almost doubled and would have gone higher but for rationing . . . . Nearly 30 percent of their earnings since Pearl Harbor had been saved up. Personal savings in cash, bonds, bank accounts and the like had been $15 billion in 1940; in 1945 they were more than three times as much. And if anyone needed a loan, the banks had so much money to lend and so little demand for it that they asked for just 2.5 percent in return.[11]

Another factor easing the transition to a post-war economy was the fact that the United States had had virtually no "defense industry" as such prior to World War II. Like the soldiers, the production base in World War II was "drafted," more or less reluctantly, into armaments production.[12] Industry had been under some degree of compulsion to abandon commercial production in favor of military production since early 1940, and by the time of the attack on Pearl Harbor, "nonessential" production had already been substantially curtailed. For industry as well as military personnel, the end of the war meant a welcome return to "normal" ways of life and prewar commercial patterns.

Even with these favorable economic factors, economic prosperity after the demobilization from World War II was by no means assured. The World War II planners determined that the swift reconversion of industry would be an essential element of recovery. Extensive advance planning for reconversion of facilities was undertaken early on, with the hope that a major dislocation at the termination of the war could be avoided.

Thus, planning for the reconversion of economic activity began shortly after the start of the war. Gearing up production and managing resource shortfalls was a serious enough problem in the first year of the nation's involvement to rule out any deliberate consideration of post-war reconversion or economic adjustment policies. However, by the beginning of 1943 (roughly one-third into U.S. involvement in the war) mobilization management agencies had begun to direct attention to the subject. Donald M. Nelson, Chair of the War Production Board (WPB), was an early advocate of reconversion planning. In the spring of 1943, he stated:

> If we were to be caught, now or in the future, without plans for conversion from military production to essential civilian production, in the event of a cessation of the war in Europe, then I think we should get great condemnation. This kind of advance preparation can only be done, in my opinion, by using the best brains in industry in this country to plan out how to utilize and reconvert their facilities, according to the several stages of transition from all-out war to ultimate peace. And in my opinion there should be a very well-defined plan for each industry so that at no time, until the war is completely won, will there by any falling off from maximum production.[13]

The government's first study of postwar reconversion was issued by WPB in June 1943.[14] It identified critical reconversion issues such as contract termination procedures; reconversion loans to industry; disposition of Government-owned plants, machinery, and materials; and maintenance and application of materials and production controls during the winding down of war production and demobilization. The principal planning issue concerned how to balance postwar economic priorities (full employment and early resumption of civilian production) with the continuing need for maximum war production while the conflict continued. During the last two years of the war, reconversion policy became one of the most important and controversial political issues involving the federal government.[15] At the war's end, the planning effort proved effective, and the economy absorbed 10 million returning servicemen with little impact on the unemployment rate.

State and local governments were also extremely active in planning for postwar economic growth. Western states, which had seen major expansion of industry and population, were especially active in local, state, and regional planning efforts for postwar expansion.[16]

The transition for demobilized soldiers was also eased by the passage (in June 1944, more than a year before the war's end) of the GI Bill, which provided such services as job counseling, college education, educational loans, and other educational assistance. The GI Bill set the stage for the wider availability of college education, a "fact of life" that is often taken for granted today.

In summary, the smooth transition from war production to peacetime production appears to have come about because of the fortuitous combination of:

- High economic demand (due to the previous deferral of consumer goods production, high wartime savings rate, and growth-oriented postwar economic policies);
- The ability of industry to return rapidly and smoothly to their prewar commercial endeavors (facilitated by government planning and actions to relax controls and make materials available); and
- The smooth absorption of returning servicemen back into the workforce, in many cases filling existing labor shortages or displacing people who had filled their jobs only temporarily.

Longer-term economic growth was certainly facilitated by the increased opportunities and aspirations provided by the wartime experience, training, and benefits afforded to the new, predominantly civilian workforce. As Perrett notes a lasting effect of the wartime and postwar expansion was to make the United States, for the first time, a "middle class" country.



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# Korean Conflict

Both the Korean War buildup and the subsequent demobilization were modest and gradual compared to the one that had occurred 5 to 10 years earlier. Even at the completion of hostilities, defense expenditures remained higher than any previous peacetime level, spurred on in part by what was perceived as a growing Soviet threat and a possible need to prepare for another world war.

As a result, during and after the war the nation embarked on a major preparedness effort that built up a U.S. war materials stockpile and expanded its basic industries. Dislocations at the close of the war were modest.

Labor force planners were integrated much more effectively into the overall mobilization management structure than had been the case in World War II. For the most part, the mobilization was carried out by existing government organizations under the general control of the Office of Defense Mobilization, rather than the ad hoc collection of "alphabet soup" agencies that had constantly reshuffled responsibilities during World War II. The Department of Labor (DoL) participated in major defense policy decisions on issues such as procurement and production scheduling, development of manpower programs for selected defense industries, alleviating economic distress in high unemployment areas, defense training programs, accident prevention, housing and community facility needs, and labor force expansion through more effective utilization of groups such as older or handicapped workers. Overall DoL priorities in support of the mobilization effort included:

- Expanding and distributing the labor force where needed through voluntary decisions of labor and management;
- Expanding, conserving, and distributing specialized personnel having skills essential to defense mobilization;
- Insuring the best use and productivity of the labor force;
- Creating demand for labor in areas where it is located through production, procurement, materials, and facilities location decisions; and
- Planning for the contingency of a greater defense effort.[17]

Specific activities carried out under DoL or state and local employment agency sponsorship included:

- Facilitating the entry or transfer of a "greater than normal" number of personnel, including 1 million veterans, into the labor force;
- Reducing or eliminating area labor shortages and concentrations of unemployment by influencing contract award, facilities location/expansion, materials allocation, and community employment planning;
- Helping relieve intense labor shortages in critical occupations through training, upgrading, transfer, and job breakdown programs; and
- Developing measures to meet requirements for scientists, engineers, and highly skilled workers by reducing requirements, accelerating training programs, and encouraging people to participate in training programs.[18]

The coordination efforts were relatively successful in promoting a smooth expansion. The experience of the war showed the necessity of giving equal attention to demobilization and particularly to the transition of the work force to a civil economy. Thus, later actions focused on minimizing dislocations during the subsequent cutbacks. Although the ceasefire did not occur until 1953, the conflict was in a relatively static stalemate situation for some months prior to that, and the production effort peaked in September 1952, after which it began to decline.[19] Actual defense-related employment had peaked several months before that, reflecting the completion of facilities expansion and machine tool projects.

However, the relatively milder post-Korean cutbacks again were accompanied by favorable economic circumstances. The economy and employment situation improved in the first year of Korean cutbacks: the Federal Reserve Board index of total industrial production rose to the second-highest level ever (exceeded only by the peak World War II production period in 1944); each month of the year set a new employment record; and the number of local areas with substantial labor surpluses declined from 21 in July 1952 to 16 in July 1953.[20]

The absence of significant worker dislocations during this period appears to be due to a combination of circumstances very similar to those that existed at the end of World War II. At the peak of war production, the economy was experiencing significant labor shortages that would have been even worse except for substantial temporary supplements to the labor force. Therefore, after the war, even with the returning GIs, many local areas went from a shortage to a balanced situation, rather than falling into labor surplus. Similarly, the mobilization managers during the Korean conflict had created a substantial degree of pent-up demand through rationing, economic controls, and deferral of nonessential construction and public works projects. Thus at the end of the war, the economy was performing strongly and defense cutbacks—which themselves were modest relative to the World War II demobilization—were easily absorbed in overall economic growth.

## Vietnam Conflict/NASA Cutbacks

As the national economy of the 1960s flourished, most well- managed businesses grew. Many sought new or expanded markets and adjusted their levels of production to meet the growing military requirements associated with the build-up in Vietnam. Other firms started from scratch to reap the benefits of of high government spending, increasing employment, and producing even greater amounts of civilian and defense goods. The Vietnam build-up was generally concentrated in industries that already employed large numbers of defense workers, such as the aircraft, ordnance, and transportation industries. These three sectors accounted for about 40 percent of defense-related employment generated by the build-up.

However, the short-term expansion signaled a foreboding downturn in economic activity as the conflict drew to a close. Although the cutbacks were implemented more gradually than those experienced in World War II, by the end of the 1960s, the defense industrial base had begun to shrink in response to the U.S. drawdown. In 1969, troop strength was reduced by nearly 300,000, cutting total wartime expenditures by about 50 percent. As a further blow to the economy, measures taken to decrease military spending were mirrored by a 50 percent reduction in the nation's space program—to $3 billion per year. The poor economic climate was due partly to the decision to maintain both the civil and military sectors, and the lack of tax increases to pay for the war, resulting in higher inflation after it.

De-escalation of the war resulted in rapid reductions in the procurement of defense items, driving 1970 defense purchases to 18 percent below the 1968 peak. In the first two months of 1970 alone, 2,000 business failures were recorded in the United States, with liabilities in excess of $300 million. The changes in employment that were caused by the Vietnam cutbacks are indicated in Table 3. Between February of 1970 and 1971, manufacturing employment declined from 20 million to 18.7 million, with a considerable reduction in the average hours worked per week.[21] Within the hard-hit aerospace industry, the results of the cutbacks were considered catastrophic, far in excess of any cutbacks envisioned in today's environment. In that industry alone, employment declined from 1.5 million to about 830,000 between the start of the downturn in 1969 and the mid-1970s.[22]



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**Table 3.—Private nonagricultural employment attributable to Vietnam War**

| Industry | Vietnam-attributed employment in fiscal year 1968 | | | Change in total employment, 1968 III to 1970 III | |
|---|---|---|---|---|---|
| | Number (thousands) | Percent distribution | Percent of total industry employment | Change in number (thousands) | Percentage Change |
| Total* | 1,392.5 | 100.0 | 2.4 | 1,684 | 3.0 |
| Manufacturing | 948.1 | 68.1 | 4.9 | -493 | -2.5 |
| Ordance and accessories | 140.3 | 10.1 | 42.3 | -103 | -30.2 |
| Aircraft and parts | 232.6 | 16.7 | 27.3 | -187 | -21.9 |
| Machine shop products | 32.8 | 2.4 | 14.4 | -7 | -3.2 |
| Radio, television, and communicatios equipment | 73.9 | 5.3 | 11.1 | -52 | -7.7 |
| Electronic components and accessories | 41.4 | 3.0 | 11.1 | -38 | -10.0 |
| Other transportation equipment | 20.1 | 1.4 | 6.7 | 4 | 1.3 |
| Metals manufacturing | 57.0 | 4.1 | 4.4 | -7 | -.5 |
| Other manufacturing | 350.0 | 25.1 | 2.3 | -103 | -.7 |
| Services | 412.6 | 29.6 | 1.3 | 2,164 | 6.6 |
| Transportation and warehousing | 164.8 | 11.8 | 6.2 | 21 | .8 |
| Business services | 49.8 | 3.6 | 2.3 | 232 | 10.2 |
| Medical and educational services and nonprofit organizations | 34.6 | 2.5 | .7 | 724 | 14.2 |
| Other services | 163.4 | 11.7 | .8 | 1,187 | 5.2 |
| Construction | 14.7 | 1.1 | .5 | 9 | .3 |
| Mining | 17.1 | 1.2 | 2.8 | 4 | .6 |

*Includes wage and salary employment; excludes self-employed
Source: Department of Labor

In addition to former defense workers, the nation's employment pool was swelled by returning servicemen armed with military-related training that was of little use in a peacetime economy in the midst of a difficult transition from the war. Issues of how to manage industry conversion, including manpower conversion, became increasingly important as policymakers turned their attention to stabilizing the economy. In 1971, the Senate Committee on Banking, Housing and Urban Affairs, Subcommittee on Production and Stabilization, heard testimony on the issue of diversification into non-defense work by defense contractors. This hearing, which outlined the economic factors that had led to worker displacement, presented issues relating to the Conversion Assistance Corporation Bill, which proposed loan guarantees and management assistance to companies willing to diversify into commercial businesses. In addition, the changing demands placed on industry caused federal, state and local governments, private industry, and academia to identify ways to convert an obsolete part of the economy into a more commercially viable industrial base.

This national-level emphasis on conversion could not be translated into successes within affected communities. Federal, state and local authorities often found that the impact of defense cutbacks on communities was heightened by the extreme difficulty of converting facilities and adapting peoples' skills to non-defense applications. A primary cause of this difficulty was the increasingly specialized nature of defense work, which discouraged conversion to commercial purposes. The few efforts at



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large-scale conversion failed as newly commercialized products—buses, people movers, and subway cars—failed to meet the cost and quality requirements of civilian users.

In the period between the Korean and Vietnam wars, the government had established programs and policies that could act as economic recovery tools. Beginning in 1961, the federal government initiated the first large-scale training program for displaced workers since the Depression.[23] The Area Redevelopment Act provided general aid to displaced workers of defense and non-defense companies. Up to 16 weeks of training were provided for unemployed and underemployed workers in depressed areas, paying them an amount equal to the average unemployment compensation which was being offered by the government during that time. An expansive federal initiative, the Manpower and Development Training Act of 1962, was launched to supplement previous legislation. This act also provided up to 52 weeks compensatory pay to people in all socio-economic areas. Additional amendments ensued, and pay and weeks of receipt were increased based on educational level and financial status of the trainees. The retraining of workers was stressed in programs under the Trade Expansion Act of 1962, and the focus on youth employment was expanded under legislation enacted in 1964. The Social Security Act of 1967 was amended to include retraining for welfare recipients. Thus as of the early 1970s, there were approximately 29 different federally-funded initiatives focusing on the plight of displaced workers.[24]

In addition to these federal initiatives, many new programs were put in place on the state and local level. Programs were established in Alabama, California, Connecticut, Kansas, Massachusetts, Michigan, Pennsylvania, and West Virginia and are often integrated with federally funded programs. In California, for instance, combined state and federally funded programs to help retrain displaced workers are gaining prestige. The Postsecondary Vocational Education program employs community colleges for postsecondary vocational/technical education courses on 105 campuses in 70 community college districts statewide. Students can focus on technical training classes, including computer information science, medical technology and electronics and also receive job counseling and placement services. Additionally, the state offers adult education, sponsored by local high schools and the State Department of Education, which focuses on improving basic education skills in vocational eduction.

Similar to these state initiatives, industrial firms have established training programs for displaced plant workers, such as the Armour Automation Fund,[25] whose purpose was to manage technological change and provide assistance for displaced workers. A number of independent companies initiated their own programs to train disadvantaged people to assist them in finding employment.

## Case Studies of Community Adjustment

Although the wartime experiences described above provide lessons learned on the nation's experience in adjusting to changes in defense spending, they tend to neglect the impact that is felt by individual communities and workers who are left with faltering economies or lost jobs. The effect on workers can be particularly severe, especially at times when economic activity is at a slow pace. There have been numerous studies of the plight of displaced workers and the relative success of different groups of individuals in finding work. In general, it has been found that highly qualified and educated individuals find work more quickly than others. Fortunately, these are characteristics of a large part of the "higher tech" defense workforce. One survey of displaced workers who lost their jobs when a Boeing Aerospace contract was cancelled found that the ability of blue collar workers to find jobs at or above their former earnings was closely related to the type of training and education they had received prior to their termination; thus, the better educated received jobs considerably faster than those with less education. Other studies have found that the average period of unemployment for displaced workers is 3 to 6 months; however, many workers take much longer to find new jobs. Again, educational level was the most important determinant of reemployment success. Income losses for these displaced individuals can also be serious—more serious than time searching for work might indicate. A study of aerospace industry cutbacks in the mid-1960s, for example, showed that the average worker's loss of earnings in the year following layoffs was nearly half of his annual wage.[26]



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The descriptions of the wartime experiences indicate that over time, help for dying defense companies has remained the problem of federal, state, and particularly local authorities, who have been forced to develop a "game plan" to save their communities and residents as a crisis evolved. These governmental efforts are often aided by programs established by the company where the layoffs occurred.

The following subsections describe the impact of and recovery from defense or aerospace plant layoffs in three communities: Wichita, Kansas; Huntsville, Alabama; and Taunton, Massachusetts. All three of the massive layoffs occurred during the defense and NASA cutbacks of the 1970s. In each instance, government planning and funding assisted the community with short-term adjustment and long-term recovery. In addition, specialized programs, including job counseling and short-term on-the-job training, were initiated to benefit individual communities and the specific groups of workers that suffered most from the dislocation.

## Boeing: Wichita, Kansas

For over 40 years, Boeing Aerospace was a stable driver of the Wichita economy. From an employment high of 35,000 in 1956 on the B-52 project, Boeing successfully converted a significant part of its defense operations into a commercial aircraft business. But by 1970 an ailing commercial airline market had reduced employment at the plant to 4,200. Prospects for obtaining defense contracts to supplement dwindling commercial business were scarce. Layoffs followed, pushing Wichita's unemployment rate up to 14 percent.[27]

The Boeing experience illustrates the role of federal, state, and local authorities in helping a community and its workers adjust to problem times. The DoD Office of Economic Adjustment, established to help communities cope with base closings, played a lead role in organizing action in Wichita. Prompted by Congressional concern, the Federal Interagency Economic Adjustment Committee (IAEAC), made up of representatives from 12 federal agencies, visited Wichita to conduct an assessment. The IAEAC report recommended a set of nearly 50 development actions to expand the local economy. The purpose was to promote local development, which could eventually receive federal funding to support key community investments.

At the end of 1971, the Wichita Regional Economic Adjustment Committee (WREAC) was established to advise local officials on growth matters that would affect industrial development. WREAC's strategy focused on increasing general economic growth and trade and on diversifying the economy to help insulate it against the sporadic economic pattern in the aerospace industry. Based on these elements, federal funds were sought to develop the infrastructure of the city and a major agricultural exhibition coliseum.

These efforts were effective in promoting the economic development of Wichita, but had a lesser effect on the specific laid-off Boeing workers. In fact, roughly 20,000 highly skilled former Boeing employees were forced to relocate to take jobs in other localities. For the city, this represented a damaging loss of human capital, as well as creating an enormous housing vacancy rate.[28] Although statistics show unemployment to have dropped to 6.5 percent in the one year following the layoffs, part of the drop may be due to the large number of workers leaving the area. Substantial recovery for Wichita seemed to be more in the long term, as federal funds at that time helped create a healthier and more diverse economy for attracting workers and new businesses in the future. Additionally, the city boosted funding at all educational levels, and efforts were put in place to develop capabilities in areas such as engineering and technology at Wichita State University. The strategy developed by the city and federal economic adjustment officials seemed to focus on long-term diversification (in some high-tech areas) and on the much easier absorption of low-skilled workers laid off from Boeing at the time.

## U.S. Army, NASA Space Program: Huntsville, Alabama

In 1949, the Redstone Arsensal in Huntsville, Alabama, was re-established after having been closed after World War II. Soon afterward, the Army moved 1,000 missile engineers to the area, and in 1960 the NASA Marshall Space Flight Center was established with a mission to put a man on the moon. Between 1950 and 1965, Huntsville's population increased eight-fold, from 16,000 to 130,000. A full 75 percent of the local jobs were defense- or space-related.

The Huntsville boom was to come to an end: Simultaneously with the defense drawdown, NASA's space budget was cut 50 percent. The impact on Huntsville's economy was devastating. For example, from the mid-1960s to the early 1970s, 11,000 workers were laid off from NASA jobs alone—2,000 federal employees and 9,000 contractors.

As was the case in Wichita, Huntsville's recovery took place with federal, state, and local assistance which emphasized economic development actions. In order to absorb workers of every skill level, Huntsville received federal funding for three significant initiatives which aided in longer-term recovery: the University of Alabama in Huntsville was established, a research district and the Cummings Research Park were created, and initial development of the Huntsville-Madison County Airport began. These economic diversification initiatives attracted branch facilities of national companies to the area, luring one to three major new facilities of 300 to 400 employees each year since the late 1960s.[29] The city's new growth gave a boost to workers, who were now able to find employment in some of these newly established firms. Also, because of the city's long-term view during the early sixties, a fairly substantial infrastructure had been established in the trade and service sector, which acted as a slight cushion to defense cutbacks. Federal representatives worked with the local industrial development association and city, county, and Chamber of Commerce officials and utility boards to facilitate the change.[30]

## Raytheon (Anti-Ballistic Missile Radar Program): Taunton, Massachusetts.

A city of 45,000, Taunton owed its name to the silverplate it produced. While still maintaining its silver industry, the city has at times also manufactured locomotives, stoves, and bricks. It was therefore considered to be more diversified than most New England towns during the 1970s. However, in early 1970, Raytheon Corporation—one of the area's larger employers—was told by the DoD to terminate its missile site radar program in compliance with the Strategic Arms Limitation Talks (SALT ) between the United States and the Soviet Union. The facility, in a town adjacent to Taunton, was so specialized that it could not handle other manufacturing processes from other Raytheon facilities and was deemed to be non-convertible. When the closing of the plant was announced, it employed 1,400 workers. About 600 of the workers lived in the immediate area.[31]

Although the plant's location was outside of Taunton, the greatest impact of the closing was on the city proper. In order to provide some degree of economic order after the shutdown, a task force was established out of the Taunton Industrial Development Commission to address reemployment and reuse of the plant. The DoD's Office of Economic Adjustment and Congressional leaders assisted the task force in its efforts.

First and foremost, Raytheon established a service, through the state employment office, to help workers desiring reemployment assistance. By the end of 1973, this program, by making contacts locally, state-wide, and nationally, found employment for 705 of 755 workers asking for assistance. Early in 1973, the area's manpower planning board, the Committee on Effective Placement in the Commercial Sector, instituted a pilot program for unemployed workers (not only at Raytheon) to help write and distribute resumes to potential new employers.



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Reuse of the facility proved to be difficult. Although a series of tenants occupied the building starting in the mid-1970s, none reached the full employment capacity that had occurred under Raytheon.

For longer-term recovery, the creation of the Myles Standish Industrial Park was the most significant action that was taken. Through city, state and federal assistance, both financial and program-related, Taunton was able to redistribute and retain some of its highly skilled workers to this new hub of activity.

Some important elements of Taunton's resurgence are worth noting. Raytheon's early notification to its workers and employees aided the transition, while the company's dedication and strong reemployment effort put many back to work in a short period of time. In this particular situation, active participation from all aspects of the community was of great assistance, and the prior commitment on the part of the city to establish an industrial development committee created an easily identifiable vehicle for change.

## Case Studies: Factors Affecting Success

Each of these dislocations had many characteristics that were dissimilar: different types of cities in different regions, a variety of defense and other commercial businesses, varying numbers of workers laid off with different skill levels, and different degrees of pre-established economic development infrastructures. Nevertheless, there were also similar factors which aided in the long-term success that the cities experienced. Some characteristics of easier transitions were:

- *Early notification of plant closure.* Early notification for employees aids significantly in the transition, allowing displaced workers time to find training or jobs or to relocate to a different area. It also helps considerably in keeping a positive image for the company within the community. It should be noted that 60 days' notice of layoffs is now required by law for most facilities could cause a significant dislocation in a local area.
- *Advanced planning for reemployment and economic recovery.* In many cases, this planning included pre-established economic development teams that could serve as focal points for federal assistance and the community's recovery. These cities had easier transitions during downturns in the economy because their vehicles for change had already been put in place. In an emergency situation, it is one less measure that must be taken before recovery can begin.
- *Effective local, state, and national leadership.* Those cities that were able to rebuild did so because of *immediate* interest and funding at all levels of government for extended periods of time. When given immediate resources and reasonable assurances for the future, most workers chose to stay in the same locale, which resulted in quicker short- and longer-term recovery for the community.
- *Immediate establishment of job placement and training programs.* One of the greatest short-term benefits to laid-off workers is training that will lead to employment opportunities. These programs are instituted at the state or federal level or, often, by the affected company. In addition, some communities have enlisted the help of job consultants, who assist in all facets of placement—from identification of skills and alternate career paths, to resume drafting and distribution to interview training.

# Lessons Learned

As noted elsewhere in this paper, past budget cutbacks are very different (and much more severe) than those envisioned for the early- to mid-1990s. Although the magnitude of future cutbacks in defense spending is not yet known, few expect the reductions to average more than 4 percent per year over a 5-year period. In contrast, the reduction in defense spending between 1945 and 1947 averaged 46 percent per year; from 1954 to 1956 the drop was 7.6 percent annually; and between 1972 and 1973 the decline was 8.5 percent.[32] Despite these differences, the past experiences described above offer lessons that can aid our understanding of any impending contraction as well as our ability to deal with it constructively.

During each of the cutbacks, conversion from defense to civilian production was explored as a key means of maintaining the productivity of facilities and workers idled by defense. By definition, economic conversion refers to "a planning process for developing alternative uses for defense facilities and workers engaged in defense production *in advance* of changes in policy or budget reductions that may curtail work at the facilities."[33]

The issue of conversion is often divided into two distinct yet intertwined areas: industry conversion and manpower conversion. More attention has been given to the issue of industry conversion than that of manpower conversion, which is more difficult to approach and to affect. This is especially true of the defense industry labor force, which tends to be more highly skilled in specialized disciplines than the general commercial workforce. Unlike the challenge of adjusting from the production of defense items to similar commercial goods, facilitating workers' transitions into personally satisfying, challenging, and economically rewarding jobs is highly difficult, and retraining efforts are probably essential. For example, the skills and mode of operation for "defense engineers" is often viewed as incompatible with commercial ways of doing business. This "fact" is highly exaggerated; nevertheless, some of the conversion problems raised in the 1970s were attributed to the "defense program mentality" of the converted workers. In the case of the subway cars, this involved building the product to defense's high-tech standards—and then finding that the product just wouldn't last when put to commercial use.

The nation's industrial conversion (and reconversion) capability "saved" the nation during World War II. The success of the post-war reconversion was a result of careful advance planning and factors unique to the time: a high level of pent-up demand, high savings rate, and industry's eagerness to return to its "real business"—meeting the needs of the nation's consumers. Following the war, the new civilian economy flourished as never before. Companies eagerly returned to the businesses they had engaged in before converting to the war effort; the process was relatively simple, since plant, equipment, and manpower were available and demand had strongly reemerged. Despite the fact that 10 million soldiers had been demobilized and returned to the United States looking for work, the unemployment rate only reached 3.9 percent in 1947—up from a wartime low of 1.2 percent.[34] It should be noted, however, that the bulk of the reconversion took place through market mechanisms. The few cases (e.g., shipbuilding and aircraft) where the government attempted to foster reconversion through subsidies and other means were generally unsuccessful because the industrial facilities were ill-equipped to meet commercial market needs.[35]

Despite the effectiveness of conversion after World War II, reconversion efforts met with relatively little success in subsequent times, as defense production (and company operations) became increasingly specialized. During the late 1960s and early 1970s, industries and plants were found to have no institutional memory of producing civilian goods and were unable to transfer their knowledge of specialized defense items and processes. Conversion is likely to be even more difficult today because of a number of industrial and economic changes that have taken place in the intervening years. Factors that affect today's conversion capabilities include the following:

- The existing low savings rate and federal budget deficit crisis reduce the likelihood of other countercyclical federal or private investment spending
- Defense activities use increasingly specialized equipment, processes, skills, and management methods. Many of the facilities dedicated to defense are not compatible with commercial operations, making it difficult to identify alternative uses for an individual site. In extreme cases, plants and companies make products (such as explosives or ammunition) that are unique to defense requirements. The conversion of many of these to civilian use would be extremely difficult—if not impossible.
- Many civil sectors of the economy now find it difficult to compete effectively with foreign producers of low-cost, high-quality consumer goods. Unlike the situation that prevailed after World War II, when U.S. industry dominated the world, today's defense producers may not believe it advantageous to look toward commercial markets for future growth. More likely in today's environment, commercial layoffs will compound any problems caused by unemployment in the defense sector.

- Most often, decisions concerning reductions in employment in defense operations are not made locally, but result from decisions made at a national or corporate level. As a result, workers' continued employment and the maintenance of a local economic base may be relatively unimportant factors in determining whether to find alternative uses for an underutilized facility.
- Firms and communities must bear considerable cost when converting plants from defense-only to commercial use. In the case of a large corporation, the capital investment decision to convert a facility is made at a different location and is more likely to be influenced by financial than manpower considerations. In fact, one study showed that firms are more likely to be successful if they diversify through construction of a new plant than the modified use of an existing one.
- Advance planning for conversion on the part of industry and government has been extremely limited, due to the length and magnitude of the defense buildup. For a conversion to be successful in today's highly complex industrial environment, conversion opportunities must be "designed in" during the initial selection of equipment and processes, the design of management procedures, and through worker training (or cross-training). A prerequisite to these activities is a clear understanding of any commercial products that may be produced at that facility in the future. Changes in these areas are extremely difficult, costly, and time-consuming to accomplish after a dislocation has occurred.

Despite these difficulties, efforts to integrate military and civil production and to use commercial specifications and standards could provide much greater opportunities for conversion in the future. The "vision" of the proponents of civil-military integration is an industrial base in which the production of commercial and military products is virtually indistinguishable. This can be realized through similarities at the product level (for example, "generic" microelectronic items or aircraft components) or by the use of processing techniques that can meet the requirements of both military and civilian products. The integrated approach benefits both the defense sector—which is no longer expected to respond exclusively to the needs of a single buyer—and the commercial sector—which will find itself able to play a larger role in the defense market. Perhaps the greatest benefit is to DoD, which can call upon a broader, more innovative, and more cost-effective industrial base. Planning now underway in these areas by government and industry may enable the nation to turn to conversion as an immediate response to the next potential dislocation.

The second feature highlighted in all of the past experiences is the important role played by federal, state, and local authorities in minimizing the burden on defense workers and restoring the health of the affected communities. These were shown to be most effective where plans were already in place and response organizations were established. As noted earlier, the average time required for a worker to find new employment is only 3 to 6 months; to be effective, any governmental response must be already underway as soon as notification of a plant closing is received.

Following World War II, returning servicemen looked toward the GI Bill to ease their transition into desirable employment. Federal attention to the problems of displaced workers has grown since that time. By the end of the Vietnam War, state and local initiatives were supplemented by training and other assistance provided under federal statutes such as the Area Redevelopment Act, which aids and provides training to displaced workers, as well as the Manpower Development and Training Act.

An even wider array of programs is available today to assist displaced workers in reestablishing their careers. The most important of these from a training and education standpoint is the Job Training Partnership Act (JTPA) of 1982, which provides a range of assistance services to terminated workers. The JTPA uses federal, state, and local resources to help prepare economically disadvantaged and long-term unemployed people to gain employment. Title II authorizes funding and sets requirements for local training and employment services, while Title III of the Act specifically addresses the needs of dislocated workers. Training programs are set up at the state level and are geared towards a communitiy's needs. Although the program is administered by the Department of Labor, 80 percent of the funding under the Act is allocated to the states and partly used to staff rapid response organizations that can

make contact with workers and communities as soon as layoffs are announced. Such a rapid response, carried out at the local level, is critical to the effectiveness of employment-related programs. In permitting a rapid response to be accomplished, an important development is the passage of the Worker Adjustment and Retraining Notification Act, which requires that employers provide 60 days notice to workers when a defense cutback results in a plant closing, mass layoff, or substantial reduction in hours. The recently passed Defense Authorization and Appropriations Bills also contain economic adjustment provisions that are designed to reduce the impact of declining defense spending on communities and workers.

However, the most promising development may be industry's increased concern about the fate of their workers affected by layoffs, and the effectiveness of the programs that have been put in place to promote their reemployment. These programs acknowledge both industry's obligation to the community and the value of their investment in a workforce—which may well be called upon again when economic conditions change. The pervasiveness of private worker assistance programs was shown by a recent survey of 104 large U.S. firms. The survey found that 90 percent provided outplacement services to laid-off workers; two-thirds offered early retirement, alternative company employment, or extended health benefits; and one-third provided retraining opportunities.[36] These programs have proven to be highly effective. As perhaps a best-case example, 85 percent of 2,000 laid-off GTE workers were able to find new employment one month *prior* to the time of plant closing. The key to this accomplishment was a vigorous in-house outplacement program, which garnered the participation of all but 35 of the displaced workers.[37] In another notable industry program, General Dynamics operates a $2-million-a-year transition center that was specifically established to assist hourly workers in reemployment efforts. In addition to offering outplacement services to help workers train for new jobs, industries that hire these workers could gain considerable benefits by providing in-house reeducation and training programs to lure new workers into their firms. For instance, commercial companies could sponsor on-the-job training and courses to retrain skilled and unskilled workers for available jobs in the company. This would provide workers with incentives to learn commercially oriented work and allow companies, through a moderate amount of investment, the opportunity to obtain the most successful and brightest candidates from the defense sector. These programs could potentially be promoted through federal incentives programs designed to facilitate the reemployment of defense workers.

## Summary

Comparing the anticipated shakeout with historical experiences is difficult at best. The past experiences were the outcome of economic conditions and industrial realities that were unique to the time. The structure of the defense industrial base, the evolution of manufacturing, and the declining competitiveness of U.S. industry have created a new environment for workers, defense firms, and the communities that rely on them. Comparison is also made difficult by the fact that the dimensions of the future cutback are not known with any certainty. The severity of the problems that it may cause will depend on its magnitude, speed, and the way in which the spending cuts are distributed. For example, both Texas and Maryland are among the top 10 states in defense production. However, Maryland has one of the lowest unemployment rates in the country (3.3 percent) and would be expected to absorb cutbacks relatively well, especially since Maryland's highly skilled workforce will readily transition into careers in other high-tech areas. In contrast, Texas already has an unemployment rate of over 6 percent, and could be expected to be hard-hit by cuts affecting Texas-based firms.[38] All of these factors make comparisons between past experiences and today and broad generalizations of lessons learned difficult.

However, a number of patterns reflected in the experiences of the past provide useful insights and encouragement for today. They show the importance of government and industry efforts toward short-term relief and longer-term recovery. There are many reasons to believe that the nation has made a substantial commitment to both of these areas. Within Congress, concern about protecting workers and communities has led to special provisions in this year's authorization and appropriations bills and other recent legislative initiatives that will better enable state and local authorities to respond rapidly when a



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dislocation occurs. Industry has also become involved in promoting the reemployment of its workforce. For longer-term recovery, Congress and the executive branch have taken significant steps to improve the health and competitiveness of important U.S. industries—both commercial and defense. This includes the development of a critical technologies plan that will ensure adequate effort to establish and maintain leadership in the "dual-use" markets of the future. However, the most significant long-run initiative for workers facing defense cuts is initial steps toward civil-military integration, which will enhance our ability to make effective and continuing use of our industrial as well as human assets as market priorities change.

Although it is too late to initiate planning, diversification, and reemployment efforts before defense cutbacks begin, it is likely that these cutbacks will continue at a moderate pace for a number of years. Therefore, we still have the opportunity to mitigate the impact of future defense cutbacks with actions we take now.

# Notes

[1]Murray Weidenbaum, *Beyond the Cold War: How to Deal With Defense Cutbacks*, (Draft, July 1990), chap 4, p. 11.

[2]Yolanda K. Henderson, "Defense Cutbacks and the New England Economy," *New England Economic Review* (July/August 1990), 4.

[3]Ibid.

[4]Linda Levine, "Defense Spending Cuts and Employment Adjustment," *CRS Report for Congress* (February 16, 1990), 2.

[5]Joseph V. Cartwright, "Potential Defense Work Force Dislocations and U.S. Defense Budget Cuts: An Illustration," (DoD Office of Economic Adjustment Staff Paper, March 1990), 2.

[6]Levine, op. cit., 11-12.

[7]U.S. Department of Labor, Bureau of Labor Statistics, as cited in U.S. Congress, Legislative Reference Service, *Mobilization Planning and the National Security (1950-1960): Problems and Issues* (Washington, DC: 1950), 211.

[8]Geoffrey Perrett, *Days of Sadness, Years of Triumph: The American People 1939-1945* (New York: Coward, McCann, and Geoghegan, 1973), 399.

[9]Alan S. Milward, Alan S., *War, Economy and Society 1939-1945* (Berkeley, CA: University of California Press, 1979), 229.

[10]Chronology derived from Robert H. Connery, *The Navy and the Industrial Mobilization in World War II* (Princeton, NJ: Princeton University Press, 1951), 464-514.

[11]Perrett, op. cit., 401.

[12]Indeed, one of the first, and most serious, political controversies concerning the World War II mobilization was the conflict throughout 1940 and 1941 between the "all-outers" (who favored massive aid to the Allies, a buildup of U.S. military strength, and early intervention on the side of Britain) and the industrialists who controlled the Office of Production Management and other prewar mobilization agencies (who favored a slower, defensively-oriented buildup, were reluctant to abandon prewar civilian markets and commercial arrangements, and feared the economic dislocations that could be caused by overexpansion for war).

[13]Testimony before House Committee on Appropriations, May 1943, cited in U.S. Civilian Production Administration, Bureau of Demobilization, "Development of the Reconversion Policies of the War Production Board, April 1943 to January 1945," Historical Reports on War Administration: War Production Board, Special Study No. 15, February 1945, 3.

[14]Ernest Kanzler, "Economic Demobilization and Reconversion, The Problem and Some Recommendations," War Production Board, June 1943.

[15]For discussions of the political controversies about reconversion, see Donald M. Nelson, *Arsenal of Democracy: The Story of American War Production* (New York: Harcourt, Brace and Co., 1946), Bruce Catton, *The War Lords of Washington* (New York: Harcourt, Brace and Co., 1948).

[16]See Gerald D. Nash, *The American West Transformed: The Impact of the Second World War* (Bloomington: U. of Indiana Press, 1985), 201-208



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[17]U.S. Department of Labor submission in U.S. Congress, "Second Annual Report of the Activities of the Joint Committee on Defense Production" (Washington, D.C., 1952), 266

[18]Ibid.

[19]U.S. Department of Labor submission in U.S. Congress, "Third Annual Report of the Activities of the Joint Committee on Defense Production," (Washington, 1954), 153.

[20]Ibid.

[21]U.S. Senate, Committee on Banking, Housing and Urban Affairs, Subcommittee on Production and Stabilization, Problems Relating to Diversification Into Non-Defense Work by Defense Contractors," Tuesday, May 18, 1971, 5.

[22]"Employment Decline Between 1969 and 1977," cited in *Aviation Week and Space Technology* (September 10, 1990), 58.

[23]Gerald Somers, ed., *Retraining the Unemployed* (Madison, Milwaukee and London: University of Wisconsin Press, 1968), 4.

[24]Ibid.

[25]Ibid, 258. This fund was organized between Armour and Company and the United Packinghouse, Food and Allied Workers Unions (UPWA) and the Amalgamated Meatcutters and Butcher Workmen of North America.

[26]Arthur J. Alexander, "Defense Industry Conversion in China, the Soviet Union, and the United States," (RAND Corporation, May 1990), 55.

[27]"Previous Community Economic Adjustment Experience," in *Economic Conversion/Adjustment*, Report prepared by the President's Economic Adjustment Committee and the Office of Economic Adjustment, Office of Assistant Secretary of Defense (Manpower, Installations and Logistics) (Washington, D.C., July 1985), Appendix K, p. K-8

[28]Ibid, K-10.

[29]Ibid., K-16.

[30]Ibid., K-17.

[31]Ibid., K-21

[32]Alexander, op. cit., 50.

[33]President's Economic Adjustment Committee and the Department of Defense Office of Economic Adjustment, *Economic Adjustment/Conversion* (July 1985), 9.

[34]Alexander, op.cit., 50.

[35]Ibid.

[36]Weidenbaum, op. cit., Ch. 4, p. 5.

[37]Ibid, 6.

[38]"Amid Talk of Layoffs, Maryland Defense Companies Remain Upbeat," *Washington Post* (Washington Business), July 9, 1990, 12.



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# Firm-Based Education and Training of Workers: A Case Study of the Xerox Corporation

Burt S. Barnow and Amy B. Chasanov

## Introduction

This report is based on a case study of the education and training provided to Xerox workers. The objective of the study is to assist in the development of policies to help firms keep their employees competitive. Xerox was selected for the case study because it is widely known for its commitment to training. The report consists of two major sections. First, a literature review discusses the necessity for training and retraining, the level of existing firm-sponsored training, the reasons why current training levels may not be sufficient, and exemplary approaches and practices in retraining. Second, a description of the training conducted at Xerox is presented; it is based upon interviews with individuals involved in the establishment and delivery of Xerox's training programs. The Xerox case study includes company background, the organization of the training system, and descriptions of major training programs.

## Literature Review

This first section highlights (1) training as a solution to often identified problems in the U.S. economy, (2) the amount of existing firm-sponsored training in the United States, (3) the reasons why current levels of firm-sponsored training may be inadequate, and (4) exemplary approaches in employee training. Training, in this discussion, can cover a wide range of educational and training techniques. Skills denoted as general and basic education (e.g., reading, writing, mathematics) are sometimes necessary, even for experienced workers, before more specialized training can take place. Other training includes (1) general business training designed to give workers more responsibility—decision making, communication skills, teamwork, problem-solving, and social skills—and (2) skills training on newer technological methods—statistical process control, computer use, and computer-aided design and computer-aided manufacturing (CAD/CAM). When new technological equipment, new methods of work organization, or changes in job tasks and responsibilities are part of a firm's strategic plan, the existing workforce often requires training to become adept at the new equipment, to adopt new roles and responsibilities, or to acquire new skills necessary to fulfill a changing job.

### The Problem

A number of recent studies have emphasized problems in the U.S. economy, many of which could be at least partially solved by increased training of the workforce.[1] Increased international competition, declining real wages, polarization of the income distribution by educational attainment, and the introduction of new technology are often cited as reasons for increasing training.[2] A recent Office of Technology

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Assessment (OTA) report stated that "because the great majority of the workforce of 2000 is employed now, upgrading employed workers' skills will have the greatest competitive impact in the near and medium term."[3] Labor demand projections, demographic changes, skills of the current workforce, and common U.S. production practices have been mentioned to support the need to train more of the workforce.

## Labor Demand Projections

Projections indicate that there will be increased demand for higher-skilled workers, due to (1) substantial projected growth in occupations with higher educational requirements, (2) the possible "upskilling" of jobs that are currently low-skilled, and (3) the stagnation of many jobs that utilize unskilled or very low-skilled labor.[4] This demand for higher skills should be partially offset by additional opportunities for new entrants in lower skilled jobs and job turnover/replacement due to retirement of older workers in lower skilled jobs.

## Demographic Projections

There will be a decreasing number of new entrants into the labor force, as the baby bust generation reaches working age. Minorities will become a larger portion of the labor force of 2000, and historical educational attainment data, unemployment rate experience, and low minority group representation among rapidly growing high-skilled occupations all indicate that many new entrants may not possess necessary skills.

## Skills of the Workforce

There are a number of steps employers can take when the skills of their existing workforce are inadequate. While training may be the least expensive alternative, other strategies are also taken.[5] Some believe that employers hire new workers with the skills required for a job and eliminate workers whose skills are obsolete whenever substantial changes in technology and process are introduced. This replacement of the workforce is also seen when older workers are offered attractive retirement packages so that new workers with more appropriate skills can be hired.[6] In these instances, companies sometimes relocate in order to tap into a better trained labor pool. One study concluded that by the year 2000, 75 percent of all workers who are currently employed will need retraining.[7]

## U.S. Mass Production

Recent reports by the Massachusetts Institute of Technology (MIT) Commission on Industrial Productivity and the Commission on the Skills of the American Workforce discuss the role of mass production in the U.S. economy and indicate that it may be responsible for significant losses in the competitive position of the U.S. in the market for goods.[8] Mass production, or the "Taylor model," began to characterize U.S. manufacturing in the early 20th century and continues in many firms today. Under this type of production, complex jobs are broken down into specialized, simple, repetitive tasks that require responsible, steady workers, but do not require much skill or education. Only supervisors and managers must be educated because they make decisions, solve problems, and "think" for the organization. A large hierarchial structure with complicated administrative procedures is used to manage and control workers. This production strategy allows large volumes to be produced, but offers little opportunity for flexibility in process or product. In the 1950s and 1960s, most products were sold to domestic markets, and other countries offered little competition to American goods. When American goods were sold abroad, there was little change in product, ways of business, or cultural awareness, which resulted in limited success. Over time, foreign companies began to produce higher quality goods at lower prices and began to capture significant portions of the U.S. market which had been previously served by domestic production of goods. As a result of the inferior quality and higher cost of U.S. goods, the United States has faced significant losses in its competitive position for manufactured goods.

## Existing Firm-Sponsored Training

The workplace is often cited as an appropriate place for skill acquisition. Even though the implementation of federal government training initiatives is receiving increasing support, "worker training will remain largely a private sector responsibility."[9] Many firms provide either formal or informal training for their workforce; however, the quality, frequency, expense allocated, and workers targeted vary substantially. Additionally, most states have begun to subsidize firm training and retraining efforts as part of state economic development policies.

### Training in Firms

Estimates of training expenditures are not accurate because of the poor data available. However, annual formal training expenditures have been estimated to fall between $30 and $45 billion, with informal expenditures estimated much higher ($90 to $180 billion).[10] Expenditures on formal training are approximately 1.3 percent to 1.8 percent of payroll expenses. In general, "larger firms are more likely to provide structured training because they have lower labor turnover and greater access to capital to finance training."[11] Estimates suggest that 35 percent of all employees (34 million workers) received training to improve their skills since they obtained their present job. Of the 34 million workers that received upgrade training, 10.6 million benefitted from a formal company program, and 13.6 million received informal on-the-job training.[12] (School and "other"—which includes professional seminars and conventions—were the other two possible sources of training.)

As mentioned earlier, the amount and quality of training varies significantly by firm. While little research has been done in the field, some studies suggest that employers should spend at least 2 percent of their payroll on training in the short term with an ultimate goal of 4 percent.[13] A few firms, International Business Machines and Xerox for example, already spend 4 percent or more of their payroll on training. Examples of programs are presented under Exemplary Approaches in Training.

### State-Sponsored Training

While there is currently little federal support for firms that provide training for their workers, approximately 46 states provide financial support for firm-based training. A recent ASTD publication, *New Foundations: State Economic Growth Through Training*, offers descriptions of state programs.[14] Some state programs target recipients based on (1) firm behavior (e.g., the introduction of new technology or new processes), (2) type of training (e.g., upgrading and retraining), or (3) employee characteristics (e.g., displaced or potentially displaced workers). About 16 state programs have explicit qualifying requirements for state financial support that involve some combination of firm-based technological change, employee position, and type of training. Table 1 lists the relevant state programs and their requirements.

## Why Firms May Provide Too Little Training

There are a number of reasons why the amount of training provided may be less than is economically optimal.[15] "Market failures" that may influence firms' decisions to train their employees include worker mobility, competitive disadvantage, and unknown costs and benefits. Additionally, when firms do decide to provide training, they often lack in-house expertise and adequate funding, forcing them to purchase training from outside vendors that is of varying cost and quality. Firms may also provide suboptimal training that could be improved by incorporating best-practice techniques and new instructional technologies.

## Worker Mobility

A major barrier that deters employers from training is workers' ability to take the newly acquired skills with them. Worker mobility often causes firms to think they will not benefit fully from their training effort, and they offer less training as a result. Additionally, employers are more likely to train workers in specific skills that are unique to the firm (e.g., how to run a piece of equipment) than general/basic skills (e.g., writing, mathematics) because specific skills are less transferable.

**Table 1.—State programs that specifically address retraining**

| Program | Requirements |
|---|---|
| California Employment and Training Program | Workers that have been laid off or may be laid off |
| Connecticut Customized Job Training | Employers undergoing technological changes |
| Idaho Economic/Productivity Improvement Projects | Upgrade training when new technology is introduced into workplace |
| Illinois Prairie State 2000 | Businesses introducing new technology or products and individuals updating their skills |
| Indiana Basic Industry Retraining Program (BIRT) | Manufacturing firms retraining employees whose jobs altered due to technological or other changes |
| Maryland Industrial Training Program | Separate $1 million for upgrading and retraining |
| Massachusetts Industrial Services Program | Prevent layoffs and plant closings, and develop workers' skills that are in demand in other industries when they are laid off |
| Michigan Job Opportunity Bank-Upgrade | Small- & medium-sized business that modernize technological operations |
| Missouri Customized Training Program | Retraining as a result of new products, services, technologies, or productivity requirements |
| New York Employer Specific Training Program | Provide upgrading if companies provide continual employment |
| New York Economic Development Skills Training Program | Employers introducing new technology |
| North Carolina Focused Industrial Training Program | Training to upgrade and retrain employees to meet demand of new technology introduced into workplace |
| Oklahoma Existing Industry Specific Training Program | Businesses undergoing technological change |
| Oregon Targeted Training Fund | Retraining if employers retain workers |
| Wisconsin Development Fund | Industries introducing new products and/or processes |

Source: American Society for Training and Development, *New Foundations: State Economic Growth Through Training*, Fall 1989.

## Competitive Position

Many researchers believe that in order for the United States to maintain its competitive position, significant investment in human capital must be made. Many foreign governments and foreign companies

subsidize a larger portion of education and training in their countries than the United States does. Therefore, any training U.S. companies provide will be "catch-up" at this point and should improve competitiveness.

### Imperfect Market Information

Some companies cannot adequately anticipate the costs of training, in terms of development and delivery of training, as well as the lost productivity while training takes place. In addition, firms are not able to anticipate the effect of training on employee performance and overall company performance. Imperfect information also exists in regard to future technological changes, job turnover rates, and firm viability. All these uncertainties make firms less likely to invest in training.

## Exemplary Approaches in Training

Recently, U.S. firms have been looking abroad to countries like Germany and Japan in order to learn lessons from the production methods, work organization, technological integration, and training methods that are used in their efficient business operations. There are lessons to be learned from the work organization and instructional training techniques used in other countries. In addition, recent commissions have studied the training policies of American firms that spend considerable time and resources in training.

### Foreign Production Practices

It is important to note that the governments of many countries have generous policies that offer support for education and training. However, in countries like Japan, the training and education for specific jobs and careers is left to the companies, not the governments, and human resource development is given a very high priority. A number of countries—Japan, Italy, and Germany in particular—have been noted as rejecting the mass production methods fostered in the United States and developing alternative forms of workplace organization which allow them flexibility in responding to new technologies and creating variations on products to serve a segmented marketplace. The Japanese, in particular, have been successful in shortening product development cycles so that they are able to quickly implement commercial products in response to new inventions and scientific discoveries. Linkages between product conception, development, and production allow quality to be built into the product (not just the production process) and simplicity to be built into the manufacturing process.[16] The goal of the Japanese is to provide continuous training that creates workers who are highly skilled, flexible, and multi-functional. This is the opposite of the worker created under a mass production system, whose job is narrowly defined and requires low skill levels. Additionally, the Japanese organizational structure is often superior because it is less hierarchical and compartmentalized.

The training done by Japanese firms is extensive and given very high priority in terms of both corporate policy and managerial success.[17] Four main types of training that are sponsored in Japan. On-the-job training is much more formal than in the United States and reflects a much different training philosophy. Workers acquire general skills through rotation in various departments which makes them very flexible and gives them broad knowledge of other sections of the firm. Many employees also spend a given amount of time each year at corporate-sponsored special training centers. Additionally, employees are encouraged to develop their skills through correspondence courses, with costs generally reimbursed by the company at the completion of the course. Finally, employees are expected to participate in quality circles and other group activities aimed at improving firm performance. The emphasis on these four types of training not only creates a better trained workforce, but creates a different type of worker.

### Successful Training in the United States

In a few industries, such as automobile manufacturing, computers, and copiers, some U.S. companies have been able to improve their competitive position by radically changing production processes and

corporate philosophies. Companies such as IBM and Xerox have maintained (or regained) significant market shares through large investments in human capital (over 3 percent of their payroll is spent on training). Xerox was able to halve both production costs and product development time by studying Japanese production methods. Xerox extensively trained and reorganized its workforce by (1) integrating copier development and production, (2) emphasizing "competitive benchmarking," (3) increasing employee involvement, (4) using statistical process control in the factory and with suppliers, (5) involving suppliers early in the product design phase, (6) emphasizing customer satisfaction, (7) reducing the number of suppliers and the level of inventories, and (8) introducing company-wide quality control and training of the total workforce (100,000).[18]

IBM's full-employment policy is much like Japanese firms' "lifetime employment" policy; the resulting decreased worker mobility makes training and education investments much less risky. Additionally, it becomes much more difficult to shut down unprofitable plants or ventures and more rational to try to turn them around. Anecdotal evidence of IBM's training is presented in *America's Choice: High Skills or Low Wages!*[19] For example, an unprofitable IBM factory in Texas was reorganized—workers were tested for competency levels; basic and upgrade skills training was provided; workers formed teams that were responsible for inspection, repairs, maintenance, ordering, supervision, trouble-shooting and problem-solving, and planning production. As a result, the ratio of indirect to direct employees was reduced from about 3 to 1 to less than 1 to 1, productivity was increased by more than 200 percent, and quality was raised fivefold.

# Xerox Case Study

## History of Xerox

In 1959, Xerox introduced the first plain paper copier—the 914—and created the copier industry.[20] Though it was large, slow (by current standards), and expensive, the 914 copier achieved astounding success, and it revolutionized the reproduction process. Facing no competition, Xerox emphasized the production of faster and larger copiers, largely ignored quality improvements and cost reductions, and lost its focus on customer satisfaction. During this period of success, a subsidiary in Europe, Rank Xerox, and an affiliate company in Japan, Fuji Xerox, were established. While Xerox successfully made larger and faster copiers, other companies began to acquire the xerographic technology.

In 1970, IBM entered the U.S. copier market, and by the mid-1970s a multitude of Japanese camera companies (e.g., Canon, Minolta, Ricoh) had entered as well. In addition, Federal Trade Commission settlements mandated that Xerox open international access to key patents. Japanese companies began by targeting the low-end of the copier market, producing small, low-cost, high-quality copiers. Xerox was unable to compete with these copiers, and the Japanese companies used their gains in market share at the low end of the market to penetrate the mid-range market. In 1975, Kodak introduced a copier in the upper end of the market that had an automatic recirculating document handler, which Xerox had yet to introduce. Xerox had been heavily investing the profits of their upper-end copiers into innovative computer technology in their Palo Alto Research Center, but had been unable to implement the new technology into commercial products. Xerox's market share in the lower end of the market was dropping, and its era of market dominance had come to a close. It is from this vantage point that Xerox recognized its need to reevaluate its position in both the U.S. and world markets and to take drastic steps to reduce the decline.

In 1979, Xerox began to study Fuji Xerox, the Japanese company in which it had half ownership, and other Japanese companies. They found that Japanese companies had (1) half the manufacturing costs, (2) half as long development schedules, (3) half the people on their production teams, (4) fewer defective parts, and (5) superior quality. This was Xerox's first attempt at "competitive benchmarking," which they define as "the continuous process of measuring our products, services, and practices against our toughest competitors or those companies renowned as the leaders."[21] From these discoveries, steps were


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taken to improve Xerox's competitive position. Between 1979 and the present, significant steps have been taken, which include:[22]

- Reorganized copier development and production (new management was brought in at the top, and production, development, and product planning were much more closely integrated);
- Increased emphasis on competitive benchmarking;
- Great increase in employee involvement in all operations;
- Use of statistical process control in the factory and with suppliers;
- Much earlier supplier involvement in product design phase;
- Focus on satisfying the customer's requirements;
- Reduction in the total number of suppliers and in inventory levels;
- Increased emphasis on having a well defined and improved product delivery process for the development of new products; and
- Introduction in 1984 of a company-wide quality control (CWQC) movement Leadership Through Quality.

Starting in 1984, a metamorphosis took place in Xerox's corporate philosophy. The firm's top priority became quality, which they define as meeting the internal and external customers' requirements. Along with this new emphasis on quality, human resource initiatives were established to increase employee effectiveness and productivity, primarily through the use of training, employee involvement, and empowerment. When asked how Xerox could afford to provide such comprehensive investments in human resources at a time when its financial position was so poor, one Xerox executive stated that these investments were the only alternative Xerox had if it wanted to stay in the market place.[23] Xerox's efforts have been rewarded not only by increases in productivity, decreases in costs, and increases in product quality, but also through their receipt of the 1989 Malcolm Baldrige National Quality Award from the Department of Commerce. The extent of Xerox's commitment to training and continuous improvement is discussed in the following sections.

## Provision of Training at Xerox

### Introduction

This section discusses training provided at Xerox, with an emphasis on training provided to managerial and technical employees. Information on Xerox's training program was obtained from discussions with seven Xerox training professionals in Webster and Rochester, New York. In addition, we attended a presentation on the company's Leadership Through Quality process. We emphasize training provided to managerial and technical employees rather than manufacturing employees because manufacturing employees constitute a relatively small portion of Xerox's workforce—only about 7,000 out of Xerox's 50,000 U.S. workers. Originally, we planned to focus the study on retraining of workers whose jobs had become obsolete. Although Xerox does conduct some training of this nature, most of the training is aimed at broadening workers' skills so that they can grow and adapt to changing job requirements. Consequently, we discuss the broad mix of training provided to Xerox employees rather than focus on specific retraining programs.

The training considered in our case study falls in three broad categories:

- *Leadership Through Quality*. This is Xerox training provided to all employees to teach them the processes and tools for quality improvement to achieve the highest quality in all its endeavors.
- *Technical Education*. Xerox's technical education courses cover a broad range of subjects including computer science, engineering, manufacturing, and general business. Technical education courses

run from short courses covered in a single session to regular college courses that provide full credit towards a degree.

- *Management Courses*. Management courses at Xerox are intended to enhance the professional development of employees in their roles as managers. These courses are generally brief, typically requiring one or two days, and cover subjects such as handling change, effective presentations, project management, and financial management. However, corporate management courses are about a week long. Xerox also offers extensive courses for manufacturing, service, and marketing employees, but these areas were beyond the scope of this case study.

## Organization of Xerox's Training Programs

The departments responsible for the delivery of training at Xerox are decentralized. There are a number of training organizations, e.g., Development and Manufacturing (D&M) Technical Education and Management Training, which focuses on professional education and training; Quality Training, which focuses on the Leadership Through Quality process and other quality initiatives; Manufacturing Training, which focuses on training for production workers; and Service and Customer-Related Training, which deals with sales and service employees. We have focused our discussion on the training delivered through the Development and Manufacturing Technical Education and Management Training and the Leadership Through Quality Training. Many training programs (about 85 percent) are delivered in-house by Xerox employees, but colleges and universities are often involved. Courses and degree programs with Cornell University, Rensselaer Polytechnic Institute (RPI), Rochester Institute of Technology (RIT), and National Technological University (NTU)—a private, nonprofit consortium of 29 institutions accredited by the North Central Association of Colleges and Schools—are offered. These courses take the form of classroom teaching (both on- and off-site), satellite broadcasts, and video and audio tapes, as well as self-instructional courses that can be used on-site or at home.

The customers of these training programs are the employees who take the courses. While supervisors are payers for the instruction, they are also customers. As described in the rest of this section, the incentives and content of training received vary by the position and level of the employee.

The organization of the training system at Xerox is fairly complex, but the complexity helps assure that the right amount of training is provided, that the training provided is appropriate in content, and that the staff managing the training is of the appropriate size. As is shown below, many parts of the firm have important roles in Xerox's training system.

### Development and Manufacturing (D&M) Technical Education and Management Training

This organization is responsible for establishing, delivering, and assessing the D&M training and education courses. The staff consists of employees who specialize in training and education, which includes contract staff as well as regular Xerox employees. The training organization offers courses through its Day/Evening Program (described in the next section) and through a number of special programs. Course listings are published in a quarterly catalog which lists the content of each course, the schedule, the instructor, and the tuition charge. Employees interested in learning more about a particular course can contact the appropriate staff member identified in the catalog. When new courses are offered, the organization works with the instructor in developing the course, and courses are periodically evaluated.

Most courses offered by the department had no tuition until about 2 years ago. Now tuition ranges from $100 for a one-day course to $1,600 for a 40-week course. Each major budget center in the firm receives a budget that can be used to purchase training from the training department or from other sources (e.g., outside seminars). There are two reasons why the tuition system was implemented. First, it makes supervisors and employees aware that the courses are not free; courses should only be taken if the employee will receive work-related benefits from the course. Second, the training department relies on tuition to pay for its staff. Thus, the training department must meet a market test for its services.

### Curriculum Advisory Councils (CACs)

The CACs play a major role in shaping the training curriculum for the Day/Evening Program and the Learning Center. (CACs have little input into the Leadership Through Quality process.) CACs provide the needs analysis that guides Xerox training departments in their development of courses. CACs usually consist of five or six individuals, and include representatives from technical education, management, and professionals in a particular field. There are a number of CACs, e.g., electrical engineering, mechanical engineering, computer science, management, and administrative support, which act as advocates for training. Their responsibilities are widespread, and they meet approximately once a month to accomplish their tasks. These responsibilities include:

- Keeping on top of the latest technological developments in the field,
- Assessing the impact of technological development on Xerox's workforce, and
- Identifying the training to put in place to meet this technological challenge (training needs).

CACs serve as checkpoints to the training department because they tell the training departments what skills need to be provided to meet business objectives. It is from this point that the training departments can (1) develop or modify in-house courses, (2) consult public sources or vendors for the provision of courses, or (3) enlist the help of a local college or university. The CACs act as both the co-suppliers and the customers of the training; they also offer quality control because they ensure that the course meets their stated requirements. The CACs are currently undergoing a revitalization process to ensure that the existing members are appropriate and to elevate the visibility of the position so that membership is viewed as an integral part of the job.

### Supervisors and Employees

Supervisors and employees play an obvious role in the training system. Employees are the consumers of courses offered, and all courses must be approved and paid for by supervisors from their training budget. To stress the importance of training and education, Xerox includes personal and professional development in the performance appraisal process. Each appraisal should contain at least two developmental actions—one personal and one professional goal. Employees are given yearly objectives in order to promote the "continuous improvement" process. Personal objectives may include courses in time management, delegation, listening, or any other area in which the employee could improve. Professional objectives often take the form of conferences or seminars, technical courses, or the acquisition of skills in an emerging technology. Training courses are offered to address both personal and professional objectives. It becomes in the best interest of the worker to improve in the areas noted, and it is the duty of the supervisor to recommend specific objectives.

### Management

Management also plays an important part in Xerox's training system. Human resource utilization is critical to the Leadership Through Quality initiative, and training is one of the six key strategies used to change the Xerox culture and improve the quality of Xerox's workforce.[24] The commitment to training is taken seriously as evidenced by policies and practices such as requiring managers to budget for training and requiring personal and professional development improvement objectives to be included in the performance appraisal process.

### Leadership Through Quality

Xerox's unique Leadership Through Quality process is described in the next section. Training for the Leadership Through Quality process was developed and implemented through a special internal task force. After the process was developed, training was first provided to the firm's top officers. Once they

had learned to use the tools and techniques for quality improvement, they then trained the staff who reported directly to them. This "cascading" process, whereby the training goes from the top down, took 4 years to train all employees, but it offered several advantages. First, the fact that training is conducted by family group supervisors provides a clear indication of the importance Xerox ascribes to the Leadership Through Quality training. Second, because virtually all employees must teach the program following initial training, the concepts are very likely to be learned and reinforced.

## Specific Training Initiatives

Xerox offers a number of training opportunities to its workers. Although the amount of training varies each year, training costs Xerox an estimated 3 to 4 percent of its annual revenue. Although training courses are charged to managers' budgets, these costs are a small percentage of any total budget and do not seem to provide a barrier to the provision of worker training. Current chargebacks are established to cover the development, presentation, and administration costs of training incurred by the training department. Although most of the training is paid for by Xerox, the company has received some funding from New York's Structurally Unemployed Retraining Program to upgrade the skills of technicians. Descriptions of some of Xerox's training programs are provided below.

### Leadership Through Quality

The largest training effort undertaken at Xerox was Leadership Through Quality. It is a 28-hour quality training program to which Xerox estimates it has devoted over 4 million manhours and $125 million over a 54-month period to deliver to its workforce worldwide. All current employees have been trained. All new employees receive Leadership Through Quality training within 90 days of their employment at Xerox. The quality training is learned through the cascade process, used in daily activities, taught to others, and inspected by supervisors to make sure their workers are using the quality tools. Generally speaking, Leadership Through Quality gives all Xerox employees a *specialized language* that allows easy communication among all workers; a *background in common techniques* that are used extensively in team environments to solve problems and improve functions; and a *common process* for solving problems and improving quality.

Leadership Through Quality involves initiatives such as competitive benchmarking, employee involvement and empowerment, and quality tools and processes such as the Problem Solving Process (PSP) and the Quality Improvement Process (QIP). The training sequence includes an orientation (2 to 4 hours), problem solving skills and statistical tools (2 days), family group start-up that discusses mission and outputs (1 day), and quality improvement that teaches interactive skills, the quality improvement process, statistical tools, cost of quality, and competitive benchmarking (3 days).[25] These processes and tools are discussed below.

- *Competitive Benchmarking* is "the continuous process of measuring our products, services, and practices against our toughest competitors or those companies renowned as the leaders."[26] Competitive benchmarking consists of five phases: planning, analysis, integration, action, and maturity. An output is selected and then it is compared to the recognized leaders in order to incorporate successful principles and establish performance goals for Xerox.
- *Employee Involvement (EI)* was initiated with a joint union/management partnership that resulted from 1980 contract negotiations. Xerox uses a multitude of teams in problem solving and quality improvement which have authority to recommend changes to improve their work processes.
- *Problem Solving Process (PSP)* consists of six steps that involve the identification and analysis of a particular problem, as well as the implementation and evaluation of the chosen solution. PSP incorporates a number of data collection and analysis tools in order to analyze problems and select the most appropriate solutions. It is used when there is a gap between what is happening and what is desired.

- *Quality Improvement Process (QIP)* consists of nine basic steps used by a QIP team to improve the quality of an output or when a new output is being produced.[27] Major steps in the QIP include Planning for Quality, Organizing for Quality, and Monitoring for Quality.
- *Statistical Methods* include instruction on statistical tools such as histograms, Pareto charts, checklists, scatter diagrams, control charts, and other graphs and charts. The use of data is essential in PSP and QIP, and therefore data interpretation and representation are integral parts of training.

**Day/Evening Program**

The Day/Evening Program is the core of technical training; there were about 4,000 enrollments during 1990 in this effort. There has been considerable growth in enrollments during the past few years. The courses offered in the winter quarter of 1991 include Career Development (1 course); Computer Science-Software Engineering (5); Computer Science-Docuteam Training (4); Computer Science-6085 Training (5); Electrical Engineering (3); General Business (10); Manufacturing (1); Materials Science (3); Quality Training (2); and Reprographics (2).[28]

A recent study conducted by Development and Manufacturing Technical Education and Management Training indicates that in the Day/Evening Program, 85 percent of the people are involved in technical training programs and 80 percent of the time (student-days) is spent on technical subjects. In contrast, 30 percent of the people are involved in general business courses, and 20 percent of time is spent on general business subjects. The D&M training department finds this encouraging because the provision of technical training is their primary goal, with general business skills offered as more of a supplementary enrichment. The time involved in these courses ranges from 2-hour sessions to courses that meet all day for 2 days a week. On a per-course basis, Day/Evening Program class chargebacks for the winter quarter in 1991 range from $100 (e.g., for the 7-hour 1-day course "Just-In-Time Manufacturing Overview") to $1,600 (e.g., for the 100 hour, 40-week course "The Professional Engineering Review Program"). Such wide ranges in cost are based on the time and resources necessary to provide the training.

**Distance Learning Program**

The Distance Learning Program provides technical and management courses offered through either satellite video programs or scheduled on-site classes. The coursework and degrees offered include:

- Masters of Science in Computer Science, Computer Engineering, Electrical Engineering, Engineering Management, Manufacturing Systems Engineering, and Materials Science, and short non-credit courses from the National Technological University;
- Masters of Science in Computer Science, Operations Research and Industrial Engineering, Electrical Engineering, and Materials Science from Cornell University;
- Masters of Science and Certification programs in Manufacturing Systems Engineering, Mechanical Engineering, and Computer Science from Rensselaer Polytechnic Institute; and
- Masters of Science in Instructional Technology from Rochester Institute of Technology.

There are approximately 120 enrollments in these courses each year; 24 employees are currently working on degrees from NTU, and 20 employees are seeking a degree from Rochester Institute of Technology. There are 1,000 annual enrollments in non-credit satellite courses.

**Learning Center**

The Learning Center offers self-instructional courses throughout the year. Audio and video tapes may be used in the center's lab or taken home. There are approximately 1,000 enrollments in these self-paid courses each year. Unlike the Day/Evening Program, the quantity of courses taken has remained rela-

tively stable over time. Course topics offered in the winter quarter of 1991 include Computer Skills (19 courses), Electrical Engineering (8), General Business (47), Materials (5), Manufacturing (1), Mathematics (5), Mechanical (1), Reprographic Technology (3), Quality (3), Administrative Support (5), and Personal Enrichment (1).

### Critical Skills Training V (CST-V)

The Critical Skills Training Program was started because of a shift in demand for computer science engineers which left a surplus in some other technical disciplines.[29] This internal training delivery system offers a new career path for technical engineers in the hardware/software engineering field. Eligible Development and Manufacturing employees must usually hold a B.S. degree and pass a screening process before they can enroll. The screening process includes interviews with potential sponsoring organizations (other divisions within Xerox), which are responsible for the candidate's salary and tuition costs during the program. Upon successful completion of this one-year program, held in cooperation with the Rochester Institute of Technology, the trainee is placed within the sponsoring organization in an entry-level position. This program allows employees to change career tracks, have their tuition and salary expenses covered while they attend school full-time, and look forward to having appropriate jobs open for them upon completion of the program. To date, approximately 75 Xerox employees have completed this program.

### Technician's Opportunity Program (T.O.P.)

The Technician's Opportunity Program (T.O.P.) is a Xerox training program developed in conjunction with Rochester Institute for Technology's engineering department.[30] The program arose because an employee involvement group identified the limited career growth available to technicians as a major issue. Technicians can enhance their chances of moving up the career ladder by obtaining a Bachelor of Science degree in Engineering. However, people who enrolled in courses after work often found that it took 8 or more years to win a degree of potentially limited usefulness due to changes in technology and that the availability of a position after the long training period could therefore be problematic. A task force charged with addressing this issue designed T.O.P, a unique program through which technicians can substantially upgrade their skills and receive a Bachelor of Science in Electrical Engineering, Mechanical Engineering, or Computer Science. Xerox gives T.O.P. employees 8-hour work release each week to attend day and extended-day courses. RIT and Xerox provide joint administration of the program, and tuition is entirely covered by Xerox. Xerox job assignments satisfy RIT co-op credit requirements, and promotion is provided upon completion of the program. Instead of 8 or more years, the program takes between 3 and 5 years to complete. In 1989, eight T.O.P. candidates graduated from the program.

### Second Career Opportunity Program (SCOP)

The Second Career Opportunity Program is a career development program aimed at Xerox employees interested in retiring in the near future. It was meant to help Xerox employees adjust to their retirement, both financially and psychologically. Xerox started a forum for employees that included small businesses, colleges and universities, and private consultants to provide information and contacts for a second career and offer career guidance to help employees identify areas that match their skills and interests with suitable jobs opportunities.

### Tuition Reimbursement

Xerox offers to pay tuition costs for employees taking courses that are relevant to their work but not offered through internal training programs. Upon approval from a supervisor, employees are able to enroll in college and university courses.

## Conclusions

Xerox is consistently identified by researchers as an example of a firm that has regained its competitive position in the world economy by changing its corporate philosophy. The MIT Commission on Industrial Productivity stated that "Xerox should be studied by all American corporations wishing to recover from perceived problems and the threat of Japanese competition."[31] Anthony Carnevale of the American Society for Training and Development cites Xerox as an example of a company that uses training strategically and comprehensively to build its competitive advantage.[32]

Investing in its workers' training is clearly not the only reason why Xerox has made such a dramatic comeback, but human resource development is an essential component of Xerox's drive for quality. Moreover, it is not simply that Xerox invests more than most firms in its workers (about 3 to 4 percent of revenue, compared to ASTD's estimate of 1.4 percent for all U.S. firms), it is how Xerox invests in its workers that is important. Xerox's training is an integral part of the firm's business and meets the criteria specified by ASTD for "high-leverage" training. In particular, training at Xerox:

- Is linked to business strategies;
- Supports competitive goals;
- Contributes to organizational growth;
- Has top management support and participation;
- Is integrated into line management;
- Improves performance at the job level and the organizational level;
- Is job-specific;
- Uses good instructional design to drive up training quality and contain costs;
- Uses measurements and evaluations consistent with organizational practice;
- Offers training professionals adequate compensation and good career tracks; and
- Is benchmarked against state-of-the-art programs in other organizations.

In addition to making training an integral part of its effort to achieve the highest possible quality, the most significant feature of Xerox's training program is the involvement of all levels of Xerox staff in the training process. Senior management sets the tone by providing an adequate training budget and requiring that personal and professional development be covered in the performance appraisal process. The training staff must provide adequate courses or risk losing the funding that supports their positions. The Curriculum Advisory Committees assure that training is up to date and meets employees' needs. Thus, Xerox employees and managers know that training is valued and will help them and the firm move forward.

Although we were highly impressed with Xerox's training system, there is one aspect that might be improved. Although Xerox spends more than most firms on training, how can the firm tell if it is spending the "right" amount on training? Because Xerox is already a leader in training, benchmarking against competitors will not necessarily be useful in determining if it has reached the optimal level of training. If too little training is provided, the firm will not achieve all its potential growth, but at some point training takes away more time from production than it returns. Fine-tuning its training investment may be the next challenge facing the firm.

Finally, although the Xerox Leadership Through Quality focus in general and its training program in particular appear to have been very successful, other firms are likely to benefit by adapting their training effort to their own particular needs. Xerox's workforce is more technically oriented than most, and the copier industry is noted for strong competition and rapid innovation. Other firms may find that more or less training is preferred, and the mix of courses is also likely to vary. The key lesson to recognize is that training is an investment and that the payoff may take years. Xerox managers believe, however, that the investment is well worth it.



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# Notes

[1]Examples of recent reports include *America's Choice: High Skills or Low Wages! The Report of the Commission on the Skills of the American Workforce*, *Investing in People: A Strategy to Address America's Workforce Crisis* by the Commission on Workforce Quality and Labor Market Efficiency, and *Made in America: Regaining the Productive Edge, and Worker Training: Competing in the New International Economy* by the MIT Commission on Industrial Productivity.

[2]Commission for Workforce Quality and Labor Market Efficiency, *Investing in People: A Strategy to Address America's Workforce Crisis*, U.S. Department of Labor, Washington DC: 1989, p. vii, Commission on the Skills of the American Workforce, *America's Choice: High Skills or Low Wages!*, National Center on Education and the Economy, Rochester NY: June 1990, p. 1, 13, and Barnow, Burt S. and Bawden, D. Lee, *Skill Gaps in the Year 2000: A Review of the Literature, Revised Draft*, Urban Institute Policy Memorandum for the U.S. Department of Labor, October 1990. 1-3.

[3]U. S. Congress, Office of Technology Assessment, *Worker Training: Competing in the New International Economy*, OTA-ITE-457 (Washington, DC: September 1990), 25.

[4]See George Silvestri and John Lukasiewicz, "Projections of Occupational Employment, 1988-2000, *Monthly Labor Review*, Volume 112, No. 11. November 1989, and William B. Johnston and Arnold E. Packer, *Workforce 2000: Work and Workers for the Twenty-First Century*, U.S. Department of Labor, 1987.

[5]Greg Kearsley, "Introducing New Technology into the Workplace: Retraining Issues and Strategies," *Investing in People: A Strategy to Address America's Workforce Crisis, Background Papers (Volume 2)*. Commission on Workforce Quality and Labor Market Efficiency, U.S. Department of Labor (Washington DC: September 1989), 469.

[6]Michael L. Dertouzos, Richard K. Lester and Robert M. Solow, *Made in America: Regaining the Productive Edge*, The MIT Commission on Industrial Productivity, (Cambridge, MA: The MIT Press, 1989), 90-91.

[7]Galagan, Patricia A., ed. *Gaining the Competitive Edge*. (Alexandria, VA: The American Society of Training and Development, 1988), 16.

[8]This discussion is taken from portions of *America's Choice: High Skills or Low Wages! The Report of the Commission on the Skills of the American Workforce* (1990) and *Made in America: Regaining the Productive Edge* from the MIT Commission on Industrial Productivity (1989).

[9]U. S. Congress, Office of Technology Assessment, op. cit., 26.

[10]Ibid., for the findings of Oberle, Mincer, Bartel, ASTD, Carnevale & Goldstein, and Craig & Evers, 128-130.

[11]Ibid., citing John Bishop, "On-the-Job Training of New Hires," 130.

[12]Max Carey, "How Workers Get Their Training." U.S. Department of Labor. Bulletin 2226. February 1985. Note: Individuals may receive more than one type of training in the survey, so the sum of the number receiving training from a special source (school, formal program, OJT, or other) will add up to more than the total number of workers who need training.

[13]American Society for Training and Development, *Training America: Learning to Work for the 21st Century* (Alexandria VA: 1989), 12.

[14]American Society for Training and Development. *New Foundations: State Economic Growth Through Training*, (Fall 1989).



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[15]This discussion is taken from Burt Barnow, Amy Chasanov, and Abhay Pande, *Financial Incentives for Employer-Provided Worker Training: A Review of Relevant Experience in the U.S. and Abroad.* Urban Institute Policy Memorandum for the U.S. Department of Labor, (Washington, DC: April 1990), 12-14.

[16]Dertouzos, op. cit., 69-70.

[17]Ibid., 87-88.

[18]MIT Commission on Industrial Productivity, "The US Semiconductor, Computer, and Copier Industries," *The Working Papers of the MIT Commission on Industrial Productivity.* (Cambridge, MA: The MIT Press, 1989), 36-48.

[19]Commission on the Skills of the American Workforce, 31-6.

[20]MIT Commission on Industrial Productivity, op. cit., 36-38, The Xerox Corporation, *The Xerox Quest for Quality and the National Quality Award.*

[21]Xerox Corporate Quality Office, *Competitive Benchmarking: What it is and What it Can do for You* (Xerox Corporation, 1987). 2.

[22]MIT Commission on Industrial Productivity, op. cit., 40.

[23]Discussion at a question-and-answer panel at the Xerox Forum on the National Quality Award, held in Rochester, New York, on January 15, 1991 (John Cooney).

[24]The other strategies are employee involvement, empowerment, management behavior change, recognition, and communication.

[25]National Quality Communication and Promotion Office, *Xerox Forum on the National Quality Award: Presentation Slides,* (Xerox Corporation: January 1991).

[26]Xerox Corporate Quality Office, op. cit., 2.

[27]USMG Quality Office, *USMG: The Way We Work,* (Xerox Corporation, 1988), 30-34.

[28]The figures in parenthesis indicate the number of courses in the winter quarter of 1991 offered by Development and Manufacturing Technical Education and Management Training.

[29]Xerox internal document, "Critical Skills Training Program V".

[30]Richard A. Morano and Mark Britton, "Xerox Technicians Reach for the T.O.P.," *Human Resources Professional* 1 (6), (September/October 1989), 60-62.

[31]MIT Commission on Industrial Productivity, op. cit., 48.

[32]Anthony Carnevale, "America and the New Economy" (Alexandria, Virginia: American Society for Training and Development, 1990).

# The Impact of Military Drawdowns on Student Assistance Programs

Meredith Ludwig and Holly Hexter

## Introduction

A planned reduction (called the "drawdown" or "downsizing" in the press) in the size of the active duty forces of the U.S. armed services following shifting international political balances has generated excitement and worry about the future of both the servicemembers who are released early and prospective military recruits—individuals who would have chosen the service but now find this option unavailable due to reductions in accession goals and more restrictive selection criteria.

The writing of this paper began with the question: How would such military drawdowns affect higher education incentive and entitlement programs? The idea was that the demand on current federal student aid programs (including specially directed programs for veterans and military personnel) would likely increase when two events occurred concomitantly, producing new groups of prospective aid recipients. Those events are (1) changes in the military selection and retention processes, and (2) decreases in support from the military—for example, decreased tuition assistance funds and limits on "kicker" programs such as the Army College Fund.

As the research for the paper progressed, however, it became clear that many in education and in the military had not addressed the potential impact on either system. The approaches to shifting resources and emphasis were being debated as the Persian Gulf conflict and war unfolded. Postsecondary institutions enrolling large numbers of active duty servicemembers and those with a history of serving the educational goals of veterans re-examined enrollment projections. For its part, the military turned its attention to linking education more closely to the training experience and to long-term employment preparation. Assistance resources and programs for members and their dependents were being viewed in the framework of transition.

In addition, as late as December 23, 1990, senior military officials were questioning the possibility of cutting the armed forces by the 25 percent promoted by the administration.[1] For example, instead of losing 40,000 troops as planned in an agreement with Congress, the Army was growing each month by 5,000—according to Atkinson—due to recruitment and a "stop-loss" order blocking retirements and resignations that would maintain expected attrition levels.

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Note: Meredith Ludwig is director of the Office of Association Research for the American Association of State Colleges and Universities. Holly Hexter is a consultant specializing in higher education and public policy and formerly a policy analyst with the American Council on Education. The authors gratefully acknowledge the assistance of representatives of the Armed Forces, the Department of Defense, colleagues in higher education and congressional staff, and Laura Stapleton (Research Associate AASCU) in the collection of data and preparation of the paper. The views in the paper are those of the authors and do not represent the views of the American Association of State Colleges and Universities or its members.

At the time this paper was being prepared for presentation we did not know how 400,000 servicemembers currently committed in the Desert Shield operation would be further affected by a long-term placement of troops in the Persian Gulf or a war in that region. Either of these occurrences would have a direct impact upon the numbers of servicemembers leaving and the services' recruitment goals.

Also, we anticipated that the speed with which troops were deployed in this emergency and the strength of numbers available due to previous force buildup would likely be used as arguments against the largest cuts that were planned or at least draw them out over a longer period of time, say 7 years instead of 5.

Finally, the call-up of reservists created a whole set of problems for students, higher education institutions, and the military. Affected students have had to cancel classes and travel abroad without any contingency plans for scholarship loss and matriculation. The institutions were faced with the need for policies to adapt instructional delivery to student goals and locations, as well as policies affecting loss of credit and scholarship status. The military could be faced with a potential loss of manpower from the reserves, regardless of available education benefits, if the realities of the military contract deter future students from signing up.

Given the fluidity of the environment, we made a decision that this paper could best be of service by describing what is known about the current participation of active duty soldiers and veterans in postsecondary education and by describing the challenges to military and nonmilitary assistance programs that will come from changes in recruitment and attrition policies. A description of assistance systems accessible to nonveterans, veterans, and prospective military personnel is presented in Appendices A and B. A discussion of the policies affecting student assistance and proposals to meet the challenges to the systems is based on reviewing research on the outcomes of current student assistance policy and interviews with military policymakers, education service officers, Congressional staff, and chief executives of higher education institutions.

## Purposes of the Paper

We propose to accomplish three purposes with this paper:

1. To describe the current participation of military servicemembers in postsecondary education and to consider how this participation might change for a number of groups within the military as policies of selection and retention change;
2. To outline policy proposals for expanding and directing current assistance programs to meet the education and training needs of various groups within the military or with propensity to enlist in the military services; and
3. To describe the current support systems for participation in postsecondary education, through the federal student aid programs and through the military service assistance programs.

## Conclusions and Recommendations

The seven conclusions which direct the organization of the paper are as follows:

1. The changing composition of the military force will continue to generate demand for postsecondary education. Nevertheless, new selection and retention criteria, as well as budgetary reductions and other policy changes, could restrict access to postsecondary education and place additional burdens on student assistance programs.
2. The "newly unqualified" for military service are expected to have a modest effect on student assistance programs. These prospective students may indeed be considered as replacements for the expected enrollment declines in the number of traditional college-age students. While most would have high school diplomas, their academic preparation would be uneven and the traditional

path to higher education (given availability of financial aid) cannot be anticipated for all. Instead, more innovative and strengthened education and training programs must be available.

3. Veterans in postsecondary education have relied on traditional student assistance programs as well as veterans benefits. Relatively few have yet used the Montgomery GI Bill benefits; however, usage should increase as early separatees and reservists leave. This has been projected as 546,300 using benefits by the year 1995.
4. Tuition assistance, which has been the chief vehicle for access to voluntary education for active duty personnel, will likely be altered in scope and focus. Other sources of assistance (such as federal student aid programs and veterans benefits) will then be more frequently used by active duty personnel.
5. Because of articulation and transfer problems, higher education has not been uniformly supportive of either voluntary education pursuits of servicemembers or other nontraditional students. Nor are higher education institutions likely to become more receptive when traditional options, such as Reserve Officer Training Corps (ROTC) scholarship programs, disappear. Better ties between military education and higher education necessitate policies that address the unique learning needs of servicemembers, goals of military training, and prospects of veterans.
6. Federal student assistance programs will not be the only or the best route to postsecondary education and employment for all the populations to be affected by the planned drawdown. Only a certain percentage of students will use these in traditional higher education institutions. Others will find apprenticeship programs and shorter educational experiences more appropriate to their educational preparation and vocational interests.
7. A larger proportion of the "newly unqualified" would be attracted to postsecondary education if greater emphasis were given to precollege information, advisement, and mentoring programs.

## Challenges to the Current Systems: The Demand for Education Generated by Changes in Military Policies

The changing composition of the military force will continue to generate demand for postsecondary education. Nevertheless, new selection and retention criteria, as well as budgetary reductions and other policy changes, could restrict access to postsecondary education and place additional burdens on student assistance programs.

When one examines the forces as a whole, the diversity is clear. In a recent *Washington Post* article on forces in Saudi Arabia (Thursday, November 22, 1990), the following individuals were interviewed:

- A 27-year-old who had attended a private military high school and who was a graduate of an ROTC unit, now in charge of $10 million worth of high-technology equipment and men of the 24th Infantry Division;
- A woman private—Hispanic from a small town in the Southwest—who joined to help finance her college education and left a 3-month-old child behind;
- A Vietnam veteran—then a lieutenant—now a commander—who believes today's forces are more mature and physically fit;
- A 21-year-old from the South who left home to avoid poor career prospects;
- A physician from a wealthy family of physicians; and
- Second- and third-generation soldiers.[2]

In projecting demand for postsecondary education, several distinct populations must be considered: (1) recruits, (2) active duty enlisted personnel who are involuntarily separated and their families, 3) active duty personnel who remain in the force, and 4) applicants who are refused military entry.

## Recruits

In the 1980s, the services raised entrance standards, increased military pay and other benefits, and heavily promoted education benefits as part of a campaign to improve the caliber of military recruits. The effort paid off in higher aptitude scores and education levels. Currently the services attract high school graduates (92 percent of all recruits in Fiscal Year 1989), many of whom have aspirations to continue their education. Today the services frequently cite support for education as the primary enlistment motive, and their claims are bolstered by the high proportion of recruits who are participating in the Montgomery GI Bill (see Appendix B, Table B-2).

Continued demand for education will depend upon military enlistment criteria and upon the social composition of military recruits. Between 1990 and 1995, the military will be recruiting about 200,000 per year, compared with 289,000 in 1989. If current enlistment standards remain, one can assume that these new recruits will be equally disposed to pursue postsecondary education. Lower recruiting quotas could, however, make it possible for the services to become more selective and thus to admit more young people with college goals. If, on the other hand, young people perceive fewer opportunities in the military and show less propensity to enlist, the caliber of military entrants and consequent demand would be lowered.

The military's own perspective, as voiced by several staff members, is that education benefits will remain a crucial recruiting tool and that downsizing will require the services to recruit "smaller and smarter." Said one staff member, "As we recruit fewer people, we're going to be able to draw more people with educational aspirations."

## Personnel Who Are Separated and Their Families

Although the magnitude of effect is subject to debate, both military and higher education policymakers agree that the involuntary separations required in the drawdown will produce an influx of military personnel and veterans into postsecondary education. One Air Force staff member likened the impact to that of the end of the Vietnam War.

Among active duty enlisted personnel, those most likely to be separated are persons with eight years of service or less, according to one analysis.[3] In 1991 alone, involuntary separations could affect about 275,000 personnel in this category. Certainly their immediate concern will be jobs. To that end, those with advance warning may hasten to complete a degree or to have their military experience translated into college credit in order to validate the training they have received.

Aspirations for postsecondary education may be related to the number of years of service. While not as much is known about the long-term effects of military service on life choices, we do know that separatees are involved in education and training experiences to a great extent after leaving.

Andrew Kolstad used data from the National Longitudinal Study of the high school class of 1972 to identify the timing of enrollment in postsecondary education for males who graduated from high school in 1972 and had entered the military by 1979. One finding of Kolstad's analysis was that more than 50 percent of the male veterans eligible for GI Bill benefits were enrolled in a postsecondary education program within 1 year after leaving the military. When Kolstad looked 5 years out, he found almost 75 percent of benefits-eligible veterans had attended a postsecondary program at one time or another[4]

The 1985 Army experience survey of recently separated first-term soldiers found that many leave the service because of a perceived inability to receive desired education and/or skills training. Sixty percent of those who rated the Army as not valuable listed their inability to get job fulfillment, training and/or the education they wanted as reasons for not being content with Army service.[5]

Military education officers call this group "a ready market" for higher education—adults armed with veterans' benefits and in need of retraining. "A number of people will be looking at combining education with work," said Duane Geiken, command director of education for the Strategic Air Command of the U.S. Air Force. "And you'll have a fairly experienced, older student—25 to 29 years old—with money to pay for education . . . . Many of those coming out will have military experiences that have no counterpart in the civilian job sector. They will simply have to be retrained."

Since most of the military personnel in these age groups are married (between 60 percent and 75 percent), military spouses also must be factored into the equation.

Currently, older active duty individuals are more likely to be married than younger ones. However, the Department of Defense (DoD) population report describes a more complex relationship between age and marital status related to a change in "social norms" for women in the military. Women in the military are more likely to be married than men, up to age 22. Above age 22, men in the service are more likely to be married.[6]

The DoD population report shows that 24,297 or about 9 percent of the FY 1989 new accessions (total military) were married. However, for the overall active duty servicemembers, the number of spouses (as of March 1990) is estimated as 1.1 million (some enlisted personnel who reported being married may actually have been in the process of separation). The number of "other adult dependents" for all services was about 14,000.[7]

Military counselors providing "transition assistance" to servicemembers and their families report that a large proportion of military spouses are concerned about upgrading job skills or re-entering the labor market to supplement family income.

Personnel who are separated early and leave with veterans benefits will probably not provide as substantial a pressure point on the current student assistance system as the "newly unqualified." Less clear, however, is the extent to which families of early separatees will exert demand upon student assistance programs. If spouses and adult children of separatees return to a local community earlier than planned and transition assistance supports educational aspirations, enrollment interest could be substantial.

In short, the drawdown of military personnel is likely to boost demand for further education and training among those who have been forced out as they seek to transfer, upgrade, or acquire new skills to compete in the civilian labor market.

## The Remaining Force

Assumptions of military analysts are that between 1990 and 1995, the active duty force will be cut by one-quarter, from roughly 2 million to 1.5 million. A smaller force ostensibly narrows the pipeline of personnel who will participate in postsecondary education, either in voluntary education programs within the services or upon reentry into civilian life. Beyond the effects of size, however, participation in postsecondary education among the active duty enlisted force is a function of the composition of the remaining force, their geographic distribution, their occupational assignments, and the incentives and opportunities provided by the military services.

In general, according to a recent study of adult higher education and the military,

> The enlisted force is clearly a target group for higher education, especially at the associate and bachelor's degree levels. The military training and experience of the active component enlisted personnel is generally technical. Combat armed servicemembers at sergeant levels are heavily engaged in managerial responsibilities in personnel, logistics, finance, and supervision.

> Consequently, all military occupational specialties lend themselves to some higher education that complements the job and supplements the training.[8]

In a downsized force, manpower requirements may become even more technical as the military increases its dependence on technology. Projections indicate that clerical positions, rather than highly technical jobs, are likely candidates for deep manpower cuts.[9] Changes in the distribution of occupational specialties, if they occur, may enhance the value of in-service education. "It will require an educated force to properly use that technology, and the force will have to be better educated to stay in," says one military educator.

Obtaining in-service education credentials, already perceived as a factor in promotion and retention, is likely to give military personnel a greater competitive edge in the smaller force. "Promotions will become tighter and education will assume more importance" in promotion decisions, according to a military education officer.

Thus, shifting manpower needs, a more competitive environment, and finally, the career and educational goals of a leaner but more qualified force could well generate additional demand for continuing education. Says one military educator, "The services will begin to encourage even more educational endeavors within the military for technological purposes. And whenever the military downsizes, you theoretically end up with the best of the best—people with higher educational aspirations. These people will be much more eager to pursue educational opportunities, and the military will have to provide those opportunities."

## Those Refused Military Entry

Over the next 5 years, a DoD manpower analysis estimates that the military will need *316,000 fewer* young men and women than would have been required without the drawdown to meet its recruiting goals of 200,000 per year.[10] In all likelihood, these new goals will be accompanied by more restrictive entrance standards. The "newly unqualified," as they are labeled in this analysis, are likely to be disproportionately minority and disproportionately Southern. Minorities will be hit harder if aptitude requirements are raised because they have lower median Armed Forces Qualifying Test (AFQT) scores. Many will likely seek employment rather than further education after high school because they lack adequate academic preparation and financial resources. Others may begin a postsecondary program but fail to persist because of limited finances.

What is likely to happen if the military, seen in recent years as a vehicle for career opportunity especially for black youth, no longer represents a training and employment option or a bridge between high school and further education for these young people? Will community colleges, as some claim, absorb a portion of those refused entry into the military? Or will these youth simply join the plight of other noncollege-bound youth who flounder in temporary, low-pay and low-status jobs? Although no one set of institutions or programs will serve as a proxy for the military experience, community colleges and vocational/technical schools are positioned to play an important role in providing desired short-term education and training opportunities that will lead to meaningful employment. Also, training and apprenticeship programs could serve this population well if they were expanded and strengthened.

# Unanticipated Demand: "Newly Unqualified" Replacements for Traditional College-Age Students?

> The "newly unqualified" for military service are expected to have a modest effect on student assistance programs. These prospective students may indeed be considered as replacements for the expected enrollment declines in the number of traditional college-age students. While most would have high school diplomas, their academic preparation would be uneven and the

traditional path to higher education (given availability of financial aid) cannot be anticipated for all. Instead, more innovative and strengthened education and training programs must be available.

Will the "newly unqualified" look and behave like other postsecondary entrants? That is the question to answer to anticipate the demand they might exert on current student aid (Title IV) programs and education and training (such as the Job Training Partnership Act) programs.

The latest analysis from the Defense Manpower Data Center estimates there to be 316,000 fewer recruits over 5 years, an average of 63,200 individuals per year.[11] Since 89 percent of the FY 1989 accessions were between 18 and 24 years of age, we can estimate that 56,000 of the "newly unqualified" would be in that age range. Youths 18- and 19-years-of-age would comprise about 67 percent of the 89 percent.

The most recent description of the enlisted accessions makes it possible to review the significance of the characteristics of the "newly unqualified" for postsecondary participation. Since the current student assistance programs rely on family income as a major factor in allocation of resources, perhaps the most important piece of information needed in estimating new demand is the socioeconomic level of prospective students. Two others are the aspirations (including educational preparation) and the aptitudes of the prospective students. Finally, the racial and ethnic distribution of the "newly unqualified" is important to assess because of national policy concerns about educational opportunity in postsecondary participation and because of research that shows race and socioeconomic level to be related in predicting chances for college entry, retention, and completion.

The DoD report *Population Representation in the Military Services*, tracks the historical changes within the services for the characteristics of income, aptitude, aspirations, and race, among others. For example, to assess the representation of socioeconomic status among recruits, scores for recruits on a derived index of socioeconomic status—education, occupation, income, and employment status—were compared with derived scores for a similar group of the population obtained from the Current Population Surveys (CPS) of the Census. The results indicate that while the socioeconomic scores of recruits were significantly different from the scores of the individuals in the CPS survey, the differences were not large. The report concludes that the evidence does not support the historical contention that the enlisted force is primarily representative of the lower socioeconomic strata of society.[12]

Not only are recruits varied as to socioeconomic class, but also as to aptitude measured by scores on the AFQT. The screening process and emphasis on the educational benefits accrued through service ensures that current recruits have the aptitude and aspirations to participate in postsecondary education. Ninety percent or more of each FY 1989 accession class, regardless of service, were high school graduates or had higher academic credentials. Distribution of scores on the AFQT for FY 1989 show that 69 percent scored in the upper half of the AFQT percentile range. (Low-scoring applicants are not allowed to enlist.) Different combinations of educational preparation and aptitude (as measured by the AFQT scores) were found for different racial and ethnic groups. Median AFQT scores of white recruits are higher than those of blacks; however, on average, blacks have somewhat more education.[13]

With regard to minority representation among the 18- to 24-year-old age group, FY 1989 accession data indicate blacks are more likely to be represented among enlisted recruits compared with their representation in the civilian population; whereas whites and Hispanics are underrepresented relative to their peer group in the civilian population.

**Table 1.—Representation of race/ethnicity in FY 1989 accessions, by dervice, and civilians 18- to 24-years-old (Percent)**

| Race/ethnic group | Army | Navy | Marine Corps | Air Force | 18- to 24-year-old civilians |
|---|---|---|---|---|---|
| White | 68 | 73 | 74 | 84 | 82 |
| Black | 26 | 22 | 18 | 12 | 14 |
| Other | 6 | 5 | 8 | 4 | 4 |
| Hispanic | 6 | 8 | 7 | 3 | 11 |
| Non-Hispanic | 94 | 92 | 93 | 97 | 89 |

Source: Department of Defense, *Population Representation in the Military Services, Fiscal Year 1989.*

As postsecondary education contemplates projections of declines in the number of high school graduates and in college enrollments for the next five years, it may well ask itself if the "newly unqualified" could be replacements for the expected declines. In the four academic years (1991-1994) the number of male students is expected to decrease by about 81,000 students. Female participants are expected to increase by about 17,000 over the same period.

**Table 2.—Higher education enrollment, fall 1988 to fall 1994 (in thousands)**

| | | Total | Men | Women |
|---|---|---|---|---|
| Actual | 1988 | 13,043 | 5,998 | 7,045 |
| Forecasted | 1989 | 13,419 | 6,260 | 7,159 |
| | 1990 | 13,558 | 6,292 | 7,266 |
| | 1991 | 13,643 | 6,309 | 7,334 |
| | 1992 | 13,613 | 6,276 | 7,337 |
| | 1993 | 13,597 | 6,254 | 7,343 |
| | 1994 | 13,579 | 6,228 | 7,351 |

Note: Projections of enrollments in institutions of higher education were developed by means of the National Center for Education Statistics (NCES) Interactive Forecasting Model (IFMOD). This is described by NCES as an age-specific enrollment rate model. Since these forecasts were released in September 1990, NCES has revised the enrollment numbers from 1991 through the decade, adding almost 500,000 to the total number enrolled in higher education and changing the direction upward. See the newest volume in its projections series, *Projections of Education Statistics to 2002.*

According to National Center for Education Statistics (NCES) forecasts published in 1990, the biggest drops in the number of high school graduates (the pool of traditional new recruits and new first-time freshmen) may have already occurred. There were 7 percent fewer high school graduates expected between 1988-89 and 1989-90 and 4 percent fewer between 1989-90 and 1990-91. The rate of decrease of 4 percent (forecast by NCES from 1989-90 to 1993-94) is clearly more gradual.

**Table 3.—High school graduates**

| | Year | Total |
|---|---|---|
| Actual | 1987-88 | 2,801,494 |
| Estimated | 1988-89 | 2,819,933 |
| Forecasted | 1989-90 | 2,628,000 |
| | 1990-91 | 2,522,000 |
| | 1991-92 | 2,517,000 |
| | 1992-93 | 2,518,000 |
| | 1993-94 | 2,512,000 |

Note: In general, actual data comes from the Common Core of Data surveys, U.S. Department of Education, NCES; estimates come from fall sample surveys to obtain early estimates; forcasts of public and private high school graduates are computed separately. See the technical notes for methodology, "Targeted Forecast," September 1990, NCES 90-691.

If the goals of the reduced accessions are met, the number of "newly unqualified" would exceed the expected decreases in traditional age enrollments of high school graduates. Additional research to answer questions comparing these potential students with their peers currently in postsecondary education would be helpful and advisable. Using the complete file of data from the National Postsecondary Student Aid Study (NPSAS), a comparison of the characteristics and proportions of similar groups of current students to the "newly unqualified" would aid any estimates of the impact on current student assistance programs. This data was not available at the time of the development of this paper. However, desiring to estimate the dollar impact of enrolling these potential students with traditional student assistance program resources, we used analyses of student aid use by the American Council on Education (ACE).

Of the annual 56,000 (again estimated) "newly unqualified," we estimated that roughly one-third would be eligible high school graduates who would be prepared and have the inclination to go directly on to college. We further assume that these students would be dependent students and that they would come primarily from families with incomes under $20,000.

According to ACE, the typical dependent student at two-year institutions receives an average total federal aid award of $1,683 and at public four-year institutions, $2,513. Dependent students at independent institutions receive a total of $3,181 and students at proprietary institutions a total of $3,127.[14]

If 19,000 new aid recipients are added each year to the current rolls, the impact could total an additional $46 million to $48 million expended for dependent students. (Here we are assuming that the proportion of "newly unqualified" attending higher education will distribute themselves in a one-third/one-third/one-third mix unless programs are directed to increase the number matriculating at four-year institutions. That is, one-third will attend four-year institutions; one-third attend two-year institutions; and one-third attend proprietary institutions.)

## Current Postsecondary Participation by Military Personnel and Veterans

The military services organize voluntary education opportunities through a network of education centers on more than 475 military installations worldwide. Each installation has an education program run by a civilian education service officer (ESO) and usually staffed by an education counselor. Academic institutions supply registrars or other personnel to assist in academic advising, scheduling and registration.

Military servicemembers and their families are involved in pursuing postsecondary education in substantial and numerous ways. Servicemembers use tuition assistance or other aid to enroll in courses or programs of study on or near their installations. Their families can participate as well, although they are ineligible for tuition assistance. The services also support a range of nontraditional education programs. Under the aegis of the Defense Activity for Nontraditional Education Support (DANTES), personnel can enroll in independent study or earn college credit for service school courses and training through external evaluations or standardized examinations.

In FY 1989, servicemembers enrolled in 513,397 undergraduate courses and 55,460 graduate courses with the use of military-sponsored tuition assistance. Servicemembers using veterans' benefits for in-service education accounted for 39,000 undergraduate and graduate enrollments. In addition, according to DANTES, 3,569 enrollments in independent study were reported. The 100,000 credit examinations administered each year, as well as the roughly 400,000 semester hours per year earned by military personnel that may be transferable to a college program, must be added to this picture to convey the full scope of postsecondary study.

Servicemembers have several options for pursuing degree programs. Air Force personnel may enroll in the Community College of the Air Force, an accredited institution that offers programs leading to an associate degree in applied science. Army and Navy personnel may enroll in associate or baccalaureate degree programs provided through the Servicemembers Opportunity Colleges (SOC), a network of 735 accredited civilian institutions that are pledged to facilitate admissions and award of credit for participating military personnel. Currently being piloted is a new joint admissions program with members of SOC, called ConAP (Concurrent Admissions Program). This program permits new recruits to establish continuing information relationships with either a 2- or 4-year institution with the idea of becoming a student at the institution after service is completed.

In FY 1989, a total of 27,158 postsecondary degrees were awarded to servicemembers; 15,454 were associate degrees, 5,799 were baccalaureate degrees, and 5,874 were graduate degrees.

## Veterans in Postsecondary Education

Veterans in postsecondary education have relied on traditional assistance programs as well as veterans benefits. Relatively few have yet used the Montgomery GI Bill benefits; however, usage should increase as early separatees and reservists leave. This has been anticipated in the projected 546,300 using benefits by the year 1995.

In 1989, the latest year for which data are available, about 200,000 veterans used Veterans Educational Assistance Program (VEAP) or Montgomery GI Bill (MGIB) benefits for education or training. Data from the Department of Veterans Affairs (DVA) shows that almost all of those—roughly 189,000—were enrolled in postsecondary institutions (see Table 4). VEAP-ers were more likely to be enrolled in four-year than in two-year institutions; according to our estimates, veterans using MGIB-active duty benefits were distributed evenly among both two-year and four-year institutions.

**Table 4.—Veterans using education benefits at colleges and universities, 1989**

| Program | Total enrollments | 2-year | 4-year |
|---|---|---|---|
| VEAP | 75,471 | 29,294 | 46,177 |
| MGIB-active duty | 22,593 | 11,296* | 11,297* |
| MGIB-reserve | 90,584 | NA | NA |
| Total | 188,648 | | |

*Breakdowns of MGIB-active duty enrollment are estimates based on program history provided by the Department of Veterans Affairs, which shows that to date, enrollment has been split evenly between two-year and four-year programs.

Source: Department of Veterans Affairs, unpublished data.

More detailed information on veterans as part of all postsecondary education students will be available from the 1991 NPSAS study. Meanwhile, the 1986 snapshot of undergraduate financing of postsecondary education (NPSAS) included a question on student veteran's status, enabling us to describe the 1986 population of veterans in colleges and universities on some characteristics. In 1986, 73.5 percent of veterans received some aid. Veterans comprised 3.2 percent of all full-time students; approximately the same percentage of part-time students were veterans, 3.7 percent.

In 1986, students who were veterans were primarily concentrated in the fields of construction, engineering technologies, and mechanical repair. The highest proportion of veterans were in institutional programs of 2 to 3 years duration. Reportedly, most veterans listed "no formal award" as their educational objective. The next highest goal reported by veterans was an associate degree or certificate. The education of mothers and fathers of veterans and nonveterans was similar across a number of categories. The percentage of nonveterans with mothers and fathers who had earned 4-year degrees and above was much higher than that of veterans, but the percentage comparisons for high school graduates were very similar.

The recent inception of the Montgomery GI Bill accounts for the fact that relatively few veterans using these benefits have enrolled to date—about 23,500 former active duty personnel and roughly 144,000 members of the Selected Reserve. Based on continuing high sign-up rates, the DVA projects that the number making use of new GI Bill benefits will swell to more than half a million by 1995 (see Table 5).

**Table 5.—Veterans using education benefits, actual and projected, 1989-1995**

| | Actual | Projected | | | | | |
|---|---|---|---|---|---|---|---|
| Program | 1989 | 90 | 91 | 92 | 93 | 94 | 95 |
| VEAP | 83,334 | 71,882 | 64,700 | 56,500 | 48,600 | 41,200 | 34,200 |
| MGIB active | 23,830 | 116,500 | 162,300 | 214,200 | 280,000 | 345,900 | 400,200 |
| MGIB reserve | 90,584 | 124,100 | 136,400 | 140,900 | 143,600 | 146,100 | 146,100 |
| Total | 197,748 | 312,482 | 363,400 | 411,600 | 472,200 | 533,200 | 580,500 |

Source: Department of Veterans Affairs, unpublished data.

## Support for Continuing Education Within the Military

> Tuition assistance, which has been the chief vehicle for access to voluntary education for active duty personnel, will likely be altered in scope and focus. Other sources of assistance (such as federal student aid programs and veterans benefits) will then be more frequently used by active duty personnel.

Whether in the drawdown the military can provide opportunities for postsecondary study commensurate with demand, or even with most recent precedents, is uncertain. The general assumption is that fewer dollars will be allocated to support voluntary education, services will be reduced, and consequently fewer servicemembers will be able to participate. As this is being written, the services are in the throes of internal debate about the future of their voluntary education programs and the allocation of tuition assistance. It's wise to keep in mind that the services' discretion in the use of tuition assistance dollars and the distinctive profiles of the individual services' voluntary education programs mean that no single decision or program will emerge. Nevertheless, the resulting policies will shape the level of participation in postsecondary education as well as the nature of educational opportunities.

In recent years budget constraints already have compelled the services to limit the availability of tuition assistance by placing caps either on the amount reimbursed per credit or upon the total number of credits allowed. Some of the contemplated changes could dramatically further restrict the eligibility for receiving tuition assistance. The realities of a "budget-driven environment" may force the services to tie availability of tuition assistance to proponent-endorsed degrees, rather than to more general programs.

The proposals to link continuing education within the military more closely to occupational specialty have reactivated a longstanding debate about the purpose of service-sponsored voluntary education. In recent years, the programs have reflected the philosophy of the intrinsic value of a better educated force, and a full spectrum of programs and services have been offered to assist in the servicemember's personal and professional development. In today's belt-tightening, however, it seems clear that the services' "corporate" needs will take precedence over individual ones. "The pendulum now appears to be swinging toward education linked to training," comments one military educator. "This change in philosophy will change the nature of educational opportunities within the military." Added another educator:

> There is real danger that as monies get shorter, education will be subordinated to training, so much so as to simply become an extension of training needs. The strongest argument against this development is that it will not prepare military personnel for life outside the military. Despite the fact that recruiting programs are going to have to emphasize educational opportunities even more heavily, the hazard is that education will simply get swallowed up by training.

The services are likely to attempt to stretch finite tuition assistance resources in another significant way—by encouraging servicemembers to use other, nonmilitary sources of aid. Thus, as tuition assistance dries up, military personnel are being encouraged to use Montgomery GI Bill benefits, as well as to apply for Pell Grants and other scholarships. (The increasing substitution of veterans' benefits, which were originally enacted for postservice use, for in-service education raises a policy issue that extends beyond this paper's scope but is nevertheless one that warrants serious examination.) This development will place added pressure on the student financial aid system.

The restructuring of where and how voluntary education is delivered also will alter educational opportunities. Even if tuition assistance remains generally available, the closing, consolidation, or downsizing of military installations will mean that access to education programs will vary. The services are weighing options that include retaining a core of education program offerings at each education service center and permitting installations to determine additional offerings based on demand, as well as restructuring the program to concentrate resources solely on the largest installations. The services will be placing greater emphasis on such forms of nontraditional educational services as independent study and

credit by examination, which are seen as more cost-effective. And they will rely more heavily on alternative, less costly methods of delivering educational services, such as video, electronic mail, and satellite.

Finally, the downsizing of military personnel jeopardizes an already strained system of educational support services. To the extent that positions of education service officers and military counselors are eliminated or reduced, servicemembers will be left to their own devices to plan for career and educational development, identify available programs of study and obtain the necessary funds to pursue them. In the words of one military education officer, "Up to now we've been holding their hands. We may have to hand them a TA (tuition assistance) voucher and say, 'So long. You're on your own.' "

In sum, the net effect of these changes for military personnel is likely to be more sharply restricted access to military tuition assistance, a narrower spectrum of program offerings dispersed more widely, and a greater burden on the individual servicemember to locate and finance opportunities for continuing education. In addition, if the military confines its support to those programs that are deemed "service-essential," the servicemember will get less help in obtaining transferable skills and may be less prepared for the readjustment to civilian life.

The societal effects of the military downsizing could be much broader. As University of Maryland at College Park Chancellor Benjamin Massey predicts, "The major impact on the nation will be that a smaller pool of the labor force will have the encouragement to begin or continue postsecondary education." For many, and for a disproportionate number of minority youth, the loss of the employment, training, and educational opportunities, as well as the less tangible benefits of pride in achievement, afforded by a military career may well be irreplaceable.

# Higher Education's Receptivity to Military Servicemembers

Because of articulation and transfer problems, higher education has not been uniformly supportive of either voluntary education pursuits of servicemembers or other nontraditional students. Nor are higher education institutions likely to become more receptive when traditional options, such as ROTC scholarship programs, disappear. Better ties between military education and higher education necessitate policies that address the unique learning needs of servicemembers, goals of military training, and prospects of veterans.

## Articulation and Transfer

Postsecondary education has been important to all the groups described in this paper. However, as a function of diverse missions and programs, higher education institutions have forged many different responses to the educational needs and experiences of active duty military and veterans.

Guidelines have been developed for translating the knowledge acquired through the variety of military-sponsored training and off-duty voluntary education experiences of servicemembers. The *Guide to the Evaluation of Educational Experiences in the Armed Services* (American Council on Education) is a tool recognized and used by most colleges and universities to analyze the applications of military servicemembers to their institutions. However, the Department of Defense was sufficiently concerned about the information shared by higher education and the military concerning articulation of programs and transfer of credit to recently sponsor a year-long study examining problems of servicemembers in obtaining credit for their various educational experiences toward requirements for the major and for general education.

Interviews with state contacts, interviews with campus individuals who evaluate transcripts, and a transcript evaluation of typical course-taking patterns indicated how traditional higher education remains in regards to the definition and validation of educational credentials. Most of the institutional contacts were aware of used the available resources to accept and apply credit. However, this application tended

to be granted for general education, physical education, or specific elective credit. Very few credits were applied toward the requirements in the major by any institution.

Campus contacts identified problems in the process of granting credit: difficulty in interpreting military transcript information, college policies restricting military training or basic training from being transferred as college credit, the separation of nontraditional learning from the regular transcript process, and the uneven distribution of information needed for the transfer process for all prospective students.[15]

## Servicemembers Opportunity Colleges

For servicemembers participating in voluntary education while on active duty, the Servicemembers Opportunity Colleges (SOC) was established to smooth the process of transfer of credits and achievement of the degree goal. SOC is a series of networks of 2- and 4-year colleges that provides an extra layer of protection for the servicemember. SOC promotes a standardization of institutional policies and practices that seek to improve the transfer process. This is achieved by setting principles of credit acceptance and course equivalencies within the perspective of the traditional degree plan. Institutions agree to accept equivalent credit from military-sponsored education and training within these guidelines and students are informed about the likelihood of acceptance and applicability. SOC networks are organized around discipline requirements which help to mitigate the problems of most servicemembers in transferring credit for the major.

## Army/ACE Education Registry Transcript System

Another tool used by the military servicemember to improve transferability of credits is the Army/ACE Education Registry Transcript System (AARTS). AARTS is a standardized form describing the servicemember's educational history and providing the details of evaluation and credit needed by college and university personnel to award, transfer, or apply credits to collegiate programs. Military separatees leave the service with a number of different documents. In the study of articulation and transfer problems, those interviewed on campus praised the AARTS transcript as the most useful document for the application process.

## Reserve Officers Training Corps

Higher education has had a longstanding relationship with the military services in the training of prospective officers. The Reserve Officers Training Corps (ROTC) has substantial representation among 4-year institutions. ROTC scholarships allow individual students to attend a traditional college to study military science as well as a discipline. When the drawdown news started to spread, there was speculation about the aspects of the military support systems most likely to be affected. Some hypothesized that ROTC scholarships would be eliminated completely.

In the past year, 50 units have in fact been closed, 26 of them at state colleges and universities. Trying to gauge the impact of these closings on the enrollment in the institutions is difficult. Telephone calls to the institutions resulted in some information about the different ways they plan to adjust to the loss or threatened loss of support.

Compression of years of study is one response to the anticipated loss of scholarships. Another is transfer to another institution. Students who transfer will not lose their scholarships. The Department of Defense has indicated it would pay additional course credit costs involved with such transfers. In a few cases, ROTC students have indicated they will stay at their current institution and abandon the scholarship. So far, the closed programs will not affect large numbers of students. However, the loss of revenue and enrollments, especially of first-time freshmen, will not be insignificant for the colleges involved.

In the long run, a loss of this avenue for college aid will dampen higher education participation, particularly for middle-class students who tend to go directly to higher education, thereby placing an additional burden on student assistance funds. Those students who were counting on assistance through ROTC will have to apply for traditional assistance programs or delay entry into postsecondary education, earning MGIB benefits through military service. In an effort to reduce programs, services are offering cadets release from military service. Those released will then have to repay the benefits received. The payback period established is 10 years, with an interest rate of 9 percent.[16]

## Student Assistance Programs: Flexibility for Unanticipated Demand?

During the periodic review of the Higher Education Act, policymakers and educators ask whether the policies of student assistance are working to improve access to postsecondary education for all qualified students. Anticipating reauthorization hearings in the spring of 1991, higher education representatives looked at a number of proposals which could change the programs themselves, the amount of aid provided, and the role of the institutions in aid distribution. Some changes were also made in the recent (1990) budget reconciliation process. These proposals and changes, while not directly related to the education and training needs of military or prospective military, may affect their participation in assistance programs.

Family income is one of the key elements in the student allocation systems and has consistently fueled federal education policy on assistance. Mortenson and Wu examine previous studies relating higher education participation to income. They try to answer the question: Has student financial aid made a difference in the participation of the economically disadvantaged in postsecondary education? The authors conclude there is little evidence to suggest achievement of broad public policy goals.[17]

Other studies have examined changes made or anticipated to the student assistance programs and have predicted declines in participation rates or attributed declines in participation rates of students from low-income families to these changes. In a discussion paper on enrollments in the 1980s, Clotfelter reviews such recent research, including Manski and Wise, Blakemore and Low, Schwartz, Hansen, and McPherson. Findings from the body of this research are relevant to our discussion of challenges to federal student aid policy:

- Enrollment changes are directly related to socioeconomic levels and the composition of the student aid programs indicates which groups will be adversely affected;
- Minorities are experiencing a stagnating rate of participation;
- Enrollment increases have been documented for students in income groups above the median income level;
- Excess demand for college has allowed institutions to establish higher admissions standards, thereby restricting access; and
- Because of excess demand, more selective colleges were able to charge more without the negative effect of declining enrollments.[18]

Findings from 10-year analyses of racial and ethnic trends in college participation support these studies of factors and influences. The American Council on Education reported that between 1976 and 1988 the numbers of black and Hispanic students enrolled in college increased. However, the percentage of black and Hispanic high school graduates attending college declined. Family income was found to be negatively related to high school completion rates for blacks and Hispanics. Finally, increases in black, Hispanic, and American Indian enrollment tended to be concentrated in two-year institutions. Between 1976 and 1988 enrollment in two-year colleges rose twice as fast as enrollment in four-year colleges and universities.[19]

The results of the 1990 budget reconciliation provide evidence that Congress is examining some responses to the concerns raised about past investment and future flexibility. First, federal funds for student aid programs would increase by 10 percent. The total Pell award is now $2,400 and could be increased in the appropriations process. In the fall of 1990, 90 percent of new money was slated for the Pell program. (20)

Other results of the budget process for Title IV programs: Institutions would have increased flexibility to refuse to approve loans; the Supplemental Educational Opportunity Grant will increase by 13.4 percent; Perkins loan program would increase by 15 percent; State Student Incentive Grant would receive a 7.3 percent increase in financing; TRIO programs (Upward Bound, Talent Search, and Educational Opportunity Centers) for disadvantaged high school students and academic preparation preceding higher education are expected to be the beneficiary of a 38 percent increase in funds.

As the discussions on the reauthorization of the Higher Education Act continue, higher education officials are working with Congress on some proposals to increase the impact of this aid on higher education participation, retention, and completion. They are looking at current program requirements to ensure that economically disadvantaged students will obtain more adequate grant assistance without undue dependence on loans. They are also examining ways to help older students. Additional proposals deal with establishing higher awards and loan limits for programs leading to an associate degree (or higher degrees), emphasizing pre-college TRIO programs, and extending loan repayment options such as income contingent loans.

## Other Prospects for Education and Training

Federal student assistance programs will not be the only or the best route to postsecondary education and employment for all the populations to be affected by the planned drawdown. Only a certain percentage of students will use these in traditional higher education institutions. Others will find apprenticeship programs and shorter educational experiences more appropriate to their educational preparation and vocational interests.

A larger proportion of the "newly unqualified" would be attracted to postsecondary education if greater emphasis were given to precollege information, advisement, and mentoring programs.

The benefits of a college education are well-touted: higher earnings, more demand by business, and lower unemployment rates. Half of the nation's workforce who are operators, fabricators, and laborers have a high school diploma. However, these occupations are only expected to grow by 1 percent between 1988 and 2000.[21] Significantly, blacks and Hispanics are currently 18 percent of the workforce. This proportion will grow to 22 percent by the year 2000. At the same time, these race and ethnic groups are underrepresented in the number of bachelor's degree recipients and have lower college participation rates than whites.

Higher education is not the only or the most important alternative for high school graduates. Multiple action programs supported by the U.S. government, by private corporations, by community organizations, and by individual states make a substantial contribution to the integration of youth into the workforce and later into postsecondary education. However, as currently supported, these programs reach only a fraction of those who need them as an alternative. The William T. Grant Foundation supported a landmark report in 1988 called *Non-College Youth in America*. The report illustrates the kinds of school-to-work educational opportunities which might be relevant to community and individual needs. In the category of monitored work experience, it explored cooperative education, internships, apprenticeships, pre-employment training, and youth-operated enterprises. In the area of community and neighborhood service, it examined the potential of individual voluntary service and youth-guided services.

Redirected vocational education, incentives such as guaranteed postsecondary and continuing education and jobs, and career information and counseling also have potential for the school-to-work transition.[22]

In the recent budget reconciliation, the National and Community Service Bill was passed and it is expected to be funded at $62 million in FY 1991, with substantial increases over the next 2 years. A 21-member commission will be appointed by the President to administer volunteer programs created by the bill. The programs covered include the Conservation and Youth Service Corps, a Peace Corps/Vista demonstration training program for 50 students who have completed at least 2 years of college, and grants to 2- and 4-year colleges for enhancement of literacy and employment skills of Youth Service Corps enrollees.

The limited nature of this new national effort is likely to be its major drawback. Recent studies of vocational education and Job Training Partnership programs indicate that more coordination is needed to strengthen the academic (remedial education) component as well as the job training component.

Long-term programs, such as an apprenticeship program, and a strengthened Job Training Partnership program may have the most appeal to a group of noncollege-bound of the "newly unqualified." Occupational choices are becoming more restricted because the job areas of growth are expected to require higher skill levels and advanced educational preparation.

# Decisions of Emphasis

We believe the higher education authorization process is appropriately addressing the population of concern to us: the "newly unqualified." While other populations will leave the military with benefits and transition assistance, the "newly unqualified" will be an unanticipated pressure for the federal student assistance programs. From all the available data and interviews, we consider the following programs and issues essential to adequately support those individuals who would have selected the military services for its education and training benefits, but who will be unable to enter as a result of the downsizing policy.

We want to give credit for some of the details of our proposals to the 1991 AASCU Public Policy agenda presented to the AASCU membership and accepted in principle on November 20, 1990. The policy agenda is developed by the Office of Governmental Relations, AASCU.

## Pre-College Advisement and Student Aid Counseling

### Proposal

Increase funding for pre-college TRIO programs (Upward Bound and Talent Search and Educational Opportunity Centers) with priority to expand summer programs and to involve a broader array of institutions such as community-based organizations. Involve state higher education authorities in grant programs focusing on assessment of eligibility and academic preparation for college. Support school counselors in efforts to adequately advise economically disadvantaged youth regarding chances for college.

### Rationale

Pre-college academic advisement and aid counseling have proven successful as methods to attract and prepare disadvantaged youth to postsecondary education. At-risk youth programs have taken many forms but the keys to success are involvement of faculty and cooperation among community agencies, schools, and colleges. Unfortunately, the barriers to broader dissemination of these efforts are inherent in the systems critical to their success, particularly a faculty reward system that does not support public

service and a school system that has little discretionary money for special projects. Many school systems in the country are facing cutbacks due to loss of tax revenues. Others are examining new decision-making structures to change teacher and community participation. The federal government can help increase the chances for college of economically disadvantaged youth through additional support of TRIO programs and through dissemination efforts directed to school counselors.

## Strengthen Support of 2-Year Institutions and Transfer Opportunities Between 2- and 4-Year Institutions

### Proposal

Examine the Title III program for 2-year institutions, advocating a more equitable mix of funding between 2- and 4-year institutions. Work with state higher education agencies to improve data collection on transfer, dissemination of course information within and across institutions, and program review regarding credit applicability to general education, electives and requirements for the major.

### Rationale

Given the disproportionate number of blacks and Hispanics who enter the postsecondary education system through the 2-year institution and the decreased chances for their completion of a baccalaureate degree, and given the propensity for veterans and active duty military to participate in programs of 2 to 3 years in length, it seems especially important to pay attention to this extensive system of educational opportunity. Recommendations from the literature and from those interviewed include ensuring adequate and available grant aid for students who attend the 2-year institutions, most of whom are part-time students. Others have recommended lower eligibility requirements and special incentives for those working towards a transfer to the 4-year institution as student assistance options for the federal government.

Adequate grant assistance should probably be combined with a plan to phase in loans once the student has demonstrated a certain level of academic achievement and the institution has reviewed the loan repayment prospects for that student.

## Strengthen Job Training and Education Partnerships as an Approach to School-to-Work Transition

### Proposal

Expand the Job Corps, examine the educational component of the Job Training Partnership Act (JTPA); expand apprenticeship component and examine guaranteed entry into jobs, military, etc., for completion of components.

### Rationale

There are a number of changes anticipated in the workforce that could disadvantage the "newly unqualified," including significant growth of occupational areas requiring a college education. As industries face an expected decrease in the number of high school graduates, they can look to new apprenticeship programs to renew their own workforces. In combination with high schools, colleges, community services, and the military, businesses could establish apprenticeship programs that begin as soon as youths complete high school and end with a firm job commitment. The two critical components of the apprenticeship should be a continuation of higher education (part-time attendance) and on-the-job training.

Another avenue of support available to youth not prepared to enter college is the Job Training Partnership program. According to the Grant report, the JTPA system does not adequately serve at-risk youth because it relies on short-term training efforts and does not support the academic needs of those youth who tend to be reached and placed in jobs quickly. Strengthening the JTPA would involve establishing an academic remediation component as an essential part of the training activities, emphasizing drop-out prevention, and promoting successful practices, especially those that involve longer-term assistance.[23]

Although the armed services may not see a role for themselves in these training and education options, it might be useful to look at the current dilemma in the Middle East deployment of servicemembers for lessons learned. In the midst of discussions of drawdowns and unnecessary forces there has been an enormous deployment of active duty members and reservists. The latest news reports indicate recruitment interest decreased in the face of imminent travel and the reality of fighting.

Even if the military is able to change its recruitment standards in the next year it may be wise to work with other sectors in the society to prepare those who could eventually be admitted to the services. Training and increased educational opportunities for the "newly unqualified" could render them qualified; they would then be an important resource of support for the services should critical needs arise again.

Finally, the latest congressional budget reconciliation showed a new emphasis on domestic and economic concerns. Increases in immigration are supported, new jobs programs and service opportunities created. In this environment, the "newly unqualified" should certainly be viewed as a resource worthy of the investment of public support.

# Notes

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# Appendix A

## Current Support Systems for Participation in Postsecondary Education

Five different but interrelated Tital IV federal programs comprise the federal student assistance system. According to the Advisory Committee on Student Financial Assistance, "the five programs authorized by Title IV of the Higher Education Act of 1965 are designed to identify eligible disadvantaged students and provide them with grants, loans, and work opportunities to support their postsecondary education."[24]

- *Federally administered programs:* The Pell Grant program is the basic student aid program operating as an entitlement based on student need. This need is established through a need analysis formula. The student awarded a Pell grant may use it at any eligible institution; the program is administered directly by the federal government.
- *Institutionally administered programs:* Three programs are administered directly by eligible postsecondary education institutions. These are the Supplemental Educational Opportunity Grant, the College Work-Study Grant and the Perkins Loan program. Institutions must match federally committed funds with their own. A separate need analysis formula called the Congressional Methodology is used to award funds to students.
- *Lender-administered program:* The Guaranteed Student Loan program, which includes Stafford Student Loans, PLUS loans (Parent Loans to Undergraduate Student), and SLS loans (Supplemental Loans for Students), offers low-interest loans to students based also on financial need. These loans are federally guaranteed, but the funds are borrowed through banks or other approved agencies.

In an historical review of the development of federal student assistance programs, the Higher Education Act of 1965 is described as a first federal commitment to student aid based on financial need, establishing the Equal Opportunity Grant. In 1972, the act and its programs were overhauled, consolidating the programs for student financial assistance under Title IV of the act. The 1972 amendments were distinguished by putting "purchasing power in the hands of needy students."[25] This power and its effects on postsecondary participation by prospective students from families with low incomes has been debated every year since the establishment of the programs.

In the 1989-90 academic year, federal support for these student assistance programs was expected to total $18.5 billion.[26]

In addition to the generally available student financial aid programs, a group of programs called "specially directed aid" provides assistance to postsecondary students. The programs supporting active duty military, reservists, and veterans can be found in this latter category (see Appendix B).

The most recent comprehensive picture of who gets student assistance and how much they receive is the result of the National Postsecondary Student Aid Study (NPSAS) by the National Center for Education Statistics (NCES). An analysis of the NPSAS data by the American Council on Education (ACE) provides information on the average amount of award and the percentage of students receiving each type

of award by family income level.[27] The total number of aided students in the 1986-87 academic year was 4,194,871. Over half of these students came from families with incomes less than $19,999. Total federal expenditures anticipated for student assistance in 1986-87 were $24 billion.

NPSAS does provide us with comparative information on all undergraduates and on veterans compared with nonveterans. Unfortunately we are not able to investigate the active duty military who are also participating in the student assistance programs because the NPSAS file does not so designate the students.

# Appendix B

## Military Support of Education

Financial aid provided by military and veterans benefits for postsecondary education was expected to total about $1 billion in fiscal year 1990.[28] This sum represents about 6 percent of the $19.9 billion in federal aid and about 4 percent of the $27.2 billion in aid from all sources awarded to postsecondary students. During the 1980s, while total federal support for student financial aid remained level in constant dollars, veterans' benefits declined sharply while military support rose by one-third. (Veterans' education benefits dropped as the size of the cohorts eligible for old GI Bill and Vietnam-era benefits dwindled.)

**Table B-1.—Military and veterans support to postsecondary students, FY 1990 (in millions)**

| | | |
|---|---|---|
| *DoD* | ROTC scholarships | $ 183.9 |
| | Health scholarships | 87.4 |
| | Tuition assistance | 100.0 |
| Subtotal | DoD | 371.3 |
| *Veterans* | Old GI Bill | 167.0 |
| | Vocational rehabilitation | 93.5 |
| | VEAP | 153.7 |
| | New GI Bill-active duty | 218.7 |
| | New GI Bill-reserve | 108.0 |
| Subtotal | Veterans | 741.0 |
| Total, DoD and Veterans | | $1,112.0 |

Source: The Washington Office of the College Board, unpublished data.

## Tuition Assistance (TA)

The rise in military support of voluntary education in the last decade has been largely attributable to the services' increased emphasis on tuition assistance, which rose from $32 million in 1981 to $100 million in 1990. These totals of appropriated funds, however, do not reveal how much the individual services, which control their own tuition assistance programs, actually spend in a given fiscal year. Tuition assistance is but one component of the education budget within the services, and when education budgets must be shaved, as has happened in the last several years, tuition assistance has been targeted. In a much publicized case involving the Army in 1988, for instance, due to reallocations, Army installations faced a shortfall in TA before the end of the fiscal year.

As Anderson and Kime note, tuition assistance has been the military's primary vehicle for support of off-duty continuing education for servicemembers. Each service defines the purpose of its TA program slightly differently, but in general TA is perceived as supporting recruitment, retention, and professional development of military personnel.[29]

The TA programs fully fund the cost of completing high school and generally pick up 75 percent of the tuition costs incurred by servicemembers enrolling in approved courses at accredited postsecondary institutions. In the last few years, budget constraints have compelled the services to cap the allowable amounts per course or per credit (with differential caps for undergraduate and graduate study) or per fiscal year.

Despite the demonstrated value of TA—a strong correlation between use of tuition assistance and promotion and retention within the military has been reported—the programs remain particularly vulnerable in times of austerity. "Because voluntary postsecondary education is not commonly a high priority for the operationally oriented military decisionmaker," write Anderson and Kime, "there will be temptation to sacrifice Tuition Assistance as [further] budget cuts are made."[30]

## Reserve Officers Training Corps

Reserve Officers' Training Corps (ROTC) combines college courses in military science with summer training sessions to prepare future officers for the military services. Located at 4-year and 2-year college campuses, ROTC units provide scholarships for selected students to complete their education in exchange for military service. There are nearly 2,000 colleges and universities throughout the United States with agreements that support such programs. The following table summarizes participation and expenditures for the ROTC units in the armed services.

| Characteristics | Army | Navy* | Air Force |
|---|---|---|---|
| Number of host units | 350 | 66 | 148 |
| Number of agreements | 1,244 | 136 | 614 |
| Enrollments | 55,592 | 10,862 | 19,549 |
| Number of scholarships | 10,350 | 6,589 | 4,800 |
| Scholarship dollars | $66.8M | $56.1M | $52.5M |

*Marines are reported as part of the Navy statistics.

## Higher Education Loan Repayment Program: Active Duty and Reserve Personnel

There are two loan payback programs for active duty and reserve personnel relating to the federal student aid assistance Title IV programs. One permits 15 percent of a loan or $500 to be repaid for each year of service performed as an enlisted member of the Selected Reserve of the Ready Reserve and the other permits 33.3 percent or $1,500 for each year of service performed on active duty as an enlisted member in a military specialty specified by the Secretary of Defense.

An additional loan program serves to attract health professionals to the Selected Reserve. This program also relates to loans made, insured, or guaranteed under part B of Title IV of the Higher Education Act of 1965 and health education assistance loans made or insured under part C of Title VII of the Public Health Service Act.

Data provided by the Education Directorate of the Secretary of Defense show FY 89 and FY 90 expenditures and participants in these two programs:

| | Expenditures (in millions) | Participants |
|---|---|---|
| Loan repayment | | |
| FY 89 | $18.5 | 19,916 |
| FY 90 | $20.8 | 16,540 |
| Health professionals | | |
| FY 89 | $ 2.5 | 820 |
| FY 90 | $ 1.8 | 675 |

## Montgomery GI Bill and Other Veterans' Education Programs

The GI Bills that have been enacted since the end of World War II are seen as entitlements to compensate servicemembers for military duty and to facilitate their readjustment to civilian life. The primary active programs are the post-Vietnam Era Veterans Educational Assistance Program (VEAP) and the Montgomery GI Bill programs for active duty (Chapter 30) and reserve personnel (Chapter 106). Eligibility for benefits under the post-Korean GI Bill (the Old, or "noncontributory" GI Bill) effectively expired December 31, 1989, although some veterans will be able to convert those benefits to the Montgomery GI Bill.

VEAP, enacted in 1977 to provide benefits to those entering the services between January 1977 and April 1987, became the first contributory education benefit program within the then-VA. Eligible personnel must take a monthly payroll deduction or make a lump sum contribution up to $2,700, which the government matches 2 to 1. It has generally been viewed as something short of successful because of low participation and use rates (provisions permit the refund of VEAP contributions under certain circumstances). For instance, of the 1.15 million who have paid into the program since its inception, only 188,000 to date have actually used the benefits at colleges or other schools.

Enacted first as a pilot program in 1984 and made permanent by legislation in 1987, the Montgomery GI Bill for active duty personnel provides up to $10,800 in basic benefits, in exchange for a 3-year enlistment and a $1,200 contribution by the enlistee. The contribution is not refundable. Lesser amounts—up to $5,040—are made available to reservists upon completion of their initial duty. In some cases, the individual services supplement the DVA benefits with "kickers" such as the Army and Navy College Funds. Thus, depending upon military department and occupational specialty, a servicemember can walk away with as much as $25,000 in education benefits. The benefits can be used for vocational/technical education, college-level study, work/study, on-the-job training, and correspondence courses.

Under Chapter 30, active duty personnel may elect not to participate in the Montgomery GI Bill at the time they enter the service, but such a decision is irrevocable. As part of a package of transition assistance benefits, DoD authorizing legislation enacted in 1990 (P.L. 101-510) gives involuntarily separated military personnel a "second chance" to participate in the program, as well as a "first chance" to VEAP-ers or personnel who elected not to participate in either VEAP or the Montgomery GI Bill.

To date, participation in the Montgomery GI Bill for active duty personnel has been high, as the Table B-2 shows. Nearly 1 million servicemembers, representing roughly three-quarters of all eligible military personnel, have signed up since the program began 5 years ago.

**Table B-2.—Enlisted* personnel participation in New GI Bill, by service, since beginning of program (1985)**

| Service | No. Enrolled | Eligible Population (%) |
|---|---|---|
| Army* | 440,528 | 86.1 |
| Navy | 263,677 | 64.0 |
| Air Force | 123,706 | 59.0 |
| Marines | 119,486 | 75.0 |
| Total DoD | 947,397 | 73.3 |

Note: Data are current as of July 31, 1990.

*Army data combine enlisted and officer participation.

Source: House Veterans Affairs Committee, October 1990.

# The Effect of Veterans Benefits on Veterans' Education and Earnings

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Since the 1944 GI Bill, the federal government has subsidized education and training for veterans of the Armed Forces. The rationale for the original GI Bill was to speed the transition to peacetime production and to compensate veterans whose educational plans were interrupted by military service (Levitan and Zickler 1973). Increasingly, however, veterans benefits have come to be seen as an essential recruiting tool in the All-Volunteer Forces (Fernandez 1980). The transition from the post-Korean GI Bill to the less generous Veterans Educational Assistance Program (VEAP) in 1976 was blamed for a reduction in high-quality enlistments, and experimental evidence on the value of education benefits as an enlistment incentive was provided by the Educational Assistance Test Program (EATP) in the early 1980s (Fernandez 1982). In light of results from the EATP, more generous veterans benefits were re-introduced through the Army College Fund in 1982 and the Montgomery GI Bill in 1985.

Although the enlistment effects of educational benefits indicate that recruits value these benefits, few studies have directly considered the question of what benefits are actually worth to veterans.[1] One of the few quantitative evaluations of the GI Bill is the study by O'Neill and Ross (1976), who used longitudinal data to estimate the effect of the post-Korean GI Bill on earnings. They find that GI Bill users eventually enjoy a 10 percent earnings premium over veterans who did not use benefits. In contrast, in a study of nonveteran educational subsidies, Manski and Wise (1983, p. 22) conclude that, "A large fraction of Basic Educational Opportunity Grants (BEOG) go to youth who would attend a post-secondary school without the awards," and that (p. 119), "a very significant fraction of the BEOG budget is spent as a pure subsidy."

The Manski and Wise findings suggest that civilian educational benefits may have little effect on educational attainment and therefore little effect on future earnings. Do veterans benefits really improve the civilian labor market outcomes of veterans? The purpose of this paper is to estimate the effect of veterans benefits on the educational attainment and earnings of veterans who served in the Vietnam era and in the first years of the All-Volunteer Forces (AVF). The empirical analysis uses data on veterans from the Census Bureau's 1987 Survey of Veterans (SOV). The SOV reports information on 1986 earnings, program usage, and the characteristics of veterans before and after their entry into the military.

When evaluating veteran benefits, it is important to keep in mind that veterans who use benefits may be more educated than nonusers for reasons that have nothing to do with the benefits. In fact, the data

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show that benefit users have more schooling than nonusers *before* entering the military. To control for individual characteristics that are correlated with both benefits and the level of educational attainment, a fixed effects strategy is employed. This strategy entails a regression of the increment in veterans' educational attainment since entering the military on a program-use dummy and other control program-use variables. The effect of veterans benefits on earnings is then estimated by decomposing the return to education into a return to grade at entry and a return to the grade increment. Underlying this approach is the assumption that veterans benefits have no effect on earnings other than through educational attainment. The empirical results support this assumption.

Another important characteristic of veterans benefits is that veterans must acquire some sort of training to be eligible for benefits. Thus, it is no surprise that users of veteran benefits end up more educated than they were upon entry to the military. But nonusers also acquire additional schooling in the intervening years. This may be because government subsidies simply replace alternative sources of funding. In the case of veterans educational subsidies, however, I show that benefit users complete 1.4 years of schooling over and above the additional schooling acquired by veterans who did not use educational benefits.

To further substantiate the interpretation of the difference in the education increment between benefit users and nonusers as being attributable to the use of benefits, Two-Stage Least Squares (TSLS) estimates of the grade increment equations are also reported. In this case, the excluded instruments are interactions between period of service and grade at entry to service. This estimation strategy uses the reduction in benefit usage following the introduction of VEAP as a natural experiment that generated exogenous variation in benefit usage. Because the reduction in benefit generosity under VEAP was more likely to reduce benefit usage among less educated veterans, the difference in the change in benefit usage by grade at entry identifies the effect of benefits on grade increment while controlling for secular grade-at-entry and period-of-service effects.

The paper is organized as follows. The next section describes the educational benefits available to Vietnam and early AVF veterans. Section 2 outlines a statistical model for the evaluation of veterans benefits and describes the SOV data. Section 3 reports estimates of the basic model. Section 4 describes the TSLS estimation strategy and reports the resulting estimates. Section 5 offers a summary and some conclusions.

# 1. Benefits for Vietnam and Early AVF Veterans[2]

Veterans benefits fund a wide range of educational programs and vocational training. Veterans programs included subsidies and loans for attending vocational and technical schools, correspondence courses, 2- and 4-year colleges, flight training, and apprenticeships. Since their inception, veterans benefits have been the largest single federal program for student aid (Fernandez 1980).

This study focuses on cohorts of veterans who were eligible for benefits under two of the three most important pieces of benefit legislation since the Korean War. Included are Vietnam veterans, who served between August 1964 and May 1975, and veterans of the early AVF period, who served from May 1975 to September 1980. Vietnam veterans were eligible for benefits under the post-Korean GI Bill, sometimes known as the "noncontributory GI Bill". AVF veterans who entered the military after December 31, 1976, were eligible for benefits under a contributory program known as the VEAP. Beginning in 1979, a number of smaller programs were introduced, culminating in the Army College Fund in 1982. The third major piece of post-Korean War benefits legislation was the Montgomery GI Bill in 1985, which re-instated benefit levels roughly comparable to those available under the noncontributory GI Bill. Attention is focused here on Vietnam and early AVF veterans because these groups have had time to re-enter the civilian labor market by 1986, the year for which earnings are recorded in the 1987 SOV.

Veterans who served on active duty for more than 180 continuous days between January 31, 1955, and January 1, 1977, were eligible for post-Korean GI Bill benefits for up to 10 years after discharge.[3] Benefits under the post-Korean GI Bill consisted of monthly payments determined by the type of instruction undertaken and the number of dependents. In 1978, for example, a veteran attending college full time with no dependents would have been eligible for up to 45 monthly payments of $311. Individuals attending other types of institutions or attending less than full time were eligible for less. Benefit recipients under the GI Bill could expect benefit levels to be periodically increased.

Veterans who entered the military after December 31, 1976, and before July 1, 1985 were eligible to participate in the VEAP any time during active duty. VEAP participants made monthly contributions to a VEAP fund for at least 12 consecutive months, and VEAP benefits are payable any time up to 10 years after discharge from active duty. The maximum VEAP contribution was $2,700, which the government matches 2 to 1 when benefits are paid out. Thus, the maximum government contribution under VEAP is $5,400, payable in 36 monthly payments of $150 each. In contrast, the 36-month total payment under the post-Korean GI Bill was $11,196 in 1978 for a veteran with no dependents.

Replacement of the GI Bill with the less generous VEAP appears to have contributed to a decline in both the quantity and quality of recruits. To offset this decline, the individual services (beginning with the Army) offered enhancements to basic VEAP benefits. These enhancements, known as "kickers", added lump sum amounts of up to $6,000 to the VEAP fund of recruits enlisting after January 1, 1979.[4] In 1980, kicker amounts were further increased for recruits in EATP treatment groups. Lump sum contributions to VEAP funds continued to be a part of the benefit package following the EATP, and an $8,000 to $12,000 contribution for Army recruits was designated the Army College Fund in 1982 (Hogan, Smith, and Sylwester 1990).

For the purposes of this study, an important feature of the VEAP kickers is that eligibility was limited to recruits with a high school diploma who fell into armed forces mental categories I-IIIa (Fernandez 1980).[5] Thus, the VEAP kicker went a long way towards closing the gap between VEAP and GI Bill benefits in the early AVF, but only for veterans who were relatively educated upon entry to the service. The differences in VEAP benefits for men with different schooling levels are used to identify TSLS estimates in Section 4, below.

## 2. Data and Statistical Models

A simple two-equation model is used to estimate the effect of veterans benefits on education and earnings. The effect of benefits on education is characterized by

$$(1) \qquad E_{1i} = X_i\beta_1 + d_i\gamma + \alpha_i + \varepsilon_{1i},$$

where $E_{1i}$ is the highest grade completed on the survey date, $X_i$ is a vector of covariates, $d_i$ indicates whether i has ever used veterans educational benefits, $\alpha_i$ is an error component that may be correlated with $d_i$, and $\varepsilon_{1i}$ is an error component orthogonal to $X_{1i}$ and $d_i$. The effect of education on earnings is characterized by

$$(2) \qquad y_i = X_i\delta + E_{1i}\rho + v_i ,$$

where $y_i$ is log earnings, and $\rho$ is the return to education. The error term, $v_i$, is assumed to be uncorrelated with $X_i$ and $E_{1i}$.[6] The effect of veterans benefits on earnings is $\pi = \gamma\rho$.

Without additional information, the effect of veterans benefits is not identified in equations (1) and (2) because $d_i$ is correlated with $\alpha_i$. However, the SOV also reports information on completed years of schooling when entering the military. Denote entry-level schooling by $E_{0i}$, and write

$$(3) \qquad E_{0i} = X_i\beta_0 + \alpha_i + \varepsilon_{0i},$$

so that, subtracting (3) from (1), we have

(4) $$\nabla E_i = X_i\beta + d_i\gamma + \gamma_i,$$

where $\nabla E_i = E_{1i}-E_{0i}$, $\beta = \beta_1-\beta_0$, and $\varepsilon_i = \varepsilon_{1i}-\varepsilon_{0i}$. Note, also, that (2) can be written

(5) $$y_i = X_i\delta + E_{0i}\rho_0 + \nabla E_i\rho + \nu_i,$$

where the return to entry-level schooling ($\rho_0$) may differ from the return to the schooling increment ($\rho$).

The effect of veterans benefits on education is identified by Ordinary Least Squares (OLS) estimates of (4), and the effect of the grade increment on earnings is identified by OLS estimates of (5).[7] The effect of veterans benefits on earnings can then be computed as the product of the two estimates. Alternately, a "reduced form" earnings effect can be computed by OLS estimation of

(6) $$y_i = X_i\pi_0 + E_{0i}\rho_0 + d_i\pi_1 + [\varepsilon_i\rho + \nu_i].$$

where $\pi_0 = [\delta + \beta\rho]$, and $\pi_1 = \gamma\rho$.

## Specification Testing

A simple specification test for the assumptions underlying equations (4), (5), and (6) is to add the program dummy, $d_i$, to equation (5). A non-zero coefficient on $d_i$ in (5) would indicate that veterans benefits are correlated with earnings for reasons other than through the schooling increment. One interpretation of such correlation would be that veterans benefits affect earnings through variables other than schooling. More importantly, correlation between earnings and benefit usage conditional on grade increment might indicate that benefit users are special in a way that invalidates the use of differences between benefit users and nonusers to estimate program effects.

A comparison of different consistent estimates of the treatment effect provides another specification test. If equations (4), (5) and (6) are correctly specified, the estimate of $\pi$ formed by multiplying estimates of $\gamma$ and $\rho$ from equations (4) and (5), and the estimate of $\pi_1$ in the reduced form equation, (6), will have the same probability limit. It should be noted, however, that if $E_{0i}$ is included in equation (4), so that equations (4-6) include the same covariates other than $d_i$ and $\Delta E_i$, this test can be shown to be algebraically equivalent to the previous test.

## The 1987 Survey of Veterans

The 1987 SOV targeted individuals who were identified as veterans in the outgoing rotation groups of the Current Population Survey (CPS) between April 1986 and January 1987.[8] Of the 11,439 veterans identified in outgoing CPS rotation groups, 9,442 were successfully interviewed for the 1987 SOV. Of those not interviewed, many were deceased or not eligible for the survey because of insufficient time in the military. Among veterans who served after 1980, the SOV generally interviewed only those who served for at least 24 months.[9]

Because some of the information collected in the SOV could be used to identify individual veterans, the Census Bureau maintains confidentiality by restricting the content of the SOV Public Use file. In particular, information on age is grouped into 5-year intervals, information on length of service is grouped into intervals of varying widths, and information on period of service is restricted to gross measures such as whether or not the veteran served in the Vietnam Era.[10] The period of service variables also indicate whether volunteers served in the early AVF (before September 1980) or later. Another limitation is that detailed information on educational attainment is unavailable for less educated veterans.

The extract used here includes men who served in the Vietnam or early AVF periods, as defined by the Department of Veterans Affairs' period of service recodes.[11] The extract is restricted to men because relatively few women served in this period and the experiences of those who did may be unusual; the extract is restricted to Vietnam and early AVF veterans for the reasons discussed above. Included are

men aged 30 to 54 in 1987 with 1 to 15 years of active duty service. Younger and older veterans may not be typical for this period, and veterans who served 20 or more years (coded in years-of-service interval 16-20) are eligible for a military pension. Veterans with less than 1 year of service are unlikely to be eligible for veterans benefits. Also excluded are men with less than 9 years of schooling when entering the military. Finally, the sample is restricted to men with a non-negative schooling increment between entry to service and the survey date.

For those with 9 to 18 years of schooling, the SOV gives information on both the highest grade completed when entering the military and the highest grade completed on the survey date. Information on the highest degree obtained is combined with the grade completion variables to construct the schooling variables used here. High school graduates with posthigh school vocational training are assigned 13 completed years of schooling. A detailed description of the schooling variables is given in the appendix.

Table 1 reports descriptive statistics for the selected sample.[12] Of the 3,337 veterans in the SOV with service in the Vietnam era or later periods, 2,388 met the criteria for inclusion in the selected sample. The frequency distributions at the top of the table show that most men in this group were between 35 and 44 years old in 1987, and the majority had served between 3 and 5 years. The sample means show that the average years of schooling completed when entering the military was 12.5, increasing to 14.0 by the survey date. Sixty-one percent of the sample increased their educational attainment since entering the military. Ninety-five percent of the sample served in the Vietnam era and 16 percent served in the early AVF period. Most were enlisted volunteers.

Fully 78 percent of the sample acquired some sort of education or training since discharge, and 52 percent of the sample went to college or graduate school. A large fraction also received vocational, technical, or on-the-job training. Sixty-three percent of the sample received some sort of financial aid. Fifty-five percent report receiving aid through the GI Bill, 2 percent used the VEAP, and 3.3 percent used some other VA program.[13] Overall, 57 percent received financial assistance from the VA. Statistics not shown in the table indicate that program usage rates were higher among Vietnam than early AVF veterans: 58 percent of sample members with Vietnam-era service used VA education and training programs, while only 46 percent of veterans with no Vietnam-era service used these programs.

Among VA program users, 77 percent went to college or graduate school. But it is important to note that many program users do not increment their schooling. Similarly, many veterans who attend school do not receive VA assistance, although they may receive assistance from other governmental sources. These facts are summarized in the following cross-tabulation:

| | **Used VA educational benefits** | **No VA educational benefits** |
|---|---|---|
| Schooling Increment | 676 (28.3%) | 253 (10.6%) |
| No schooling Increment | 343 (14.4%) | 1,116 (46.7%) |

Among sample members not receiving VA educational benefits, 114 received benefits from other sources.

# 3. The Effect of Veterans Benefits on Education and Earnings

Equations (4), (5), and (6) constitute the basic framework for inference used to estimate the effect of veterans benefits. Before presenting estimates of these equations, however, results from a simpler

**Table 1.—Descriptive statistics**

| | Frequency distributions (% in parentheses) | | | | |
|---|---|---|---|---|---|
| Age | 30-34 | 35-39 | 40-44 | 45-49 | 50-54 |
| | 368 | 787 | 937 | 275 | 21 |
| | (15) | (33) | (39) | (12) | (1) |
| Years of service | 1-2 | 3-5 | 6-10 | 11-15 | |
| | 919 | 1183 | 258 | 28 | |
| | (39) | (50) | (11) | (1) | |

| | Means (standard deviation in parentheses) | | |
|---|---|---|---|
| *Demographics* | | | |
| Grade completed at entry | 12.5 (1.8) | Receive any Financial aid | 0.63 |
| Highest grade completed | 14.0 (2.1) | Receive any Federal aid | 0.063 |
| Schooling increased | 0.61 | Use the GI Bill | 0.55 |
| All races other than white | 0.12 | Use the VEAP | 0.020 |
| Married at entry | 0.11 | Use other VA assistance | 0.033 |
| Married | 0.75 | Use any VA assistance | 0.57 |
| *Military and VA* | | *Labor Market* | |
| Vietnam era service | 0.95 | Full-time worker | 0.91 |
| Early AVF service affects work | 0.085 | 0.16 | Health |
| Drafted | 0.25 | 1986 earnings | 28,468 (19,520) |
| Officer (commissioned or warrant) | 0.09 | | |
| *Program usage and training since discharge* | | | |
| Used any education or training | 0.78 | Attended college/grad school | 0.52 |
| Since discharge (other than vocational rehabilitation) | | Received voc/tech training<br>Received OJT/apprentice<br>Partic. in corresp. course | 0.22<br>0.18<br>0.06 |
| Attended/completed high school | 0.03 | Farm, flight, tutor, other | 0.07 |

Notes: Sample from 1987 survey of veterans (SOV-III), men who served in the Vietnam era (8/5/64-5/7/75) or the early AVF (5/8/75-9/7/80) with at least 9 years of schooling at entry to service and a non-negative increment since entering the service. Sample restricted to men aged 30-54 in 1987, with 1-15 years of active duty service. Of the 3337 SOV-III veterans with any Vietnam-era or later service, 2388 met these sample criteria.

difference-in-differences procedure are briefly discussed. Differences-in-differences estimates are based on the following version of equations (1) and (3):

$$E_{ti} = t_i\beta + \alpha_i + d_i\gamma + \varepsilon_{ti}, \quad (7)$$

where $t_i = 0$ or 1 to indicate information on i at entry to service or on the survey date, so that $t_i\beta$ is a period-specific intercept. The OLS estimate of $\gamma$ in (7) is

$$\gamma = (\bar{e}_{1u} - \bar{e}_{0u}) - (\bar{e}_{1n} - \bar{e}_{0n}), \quad (8)$$

where $e_{tj}$ denotes average schooling in period t by group j, and j = u or n to indicate program use or nonuse.

Equation (8) is simply the difference in the change in schooling between program users and nonusers. It is apparent from (7) that such an estimate controls for secular individual and period effects. The statistics underlying estimates of $\gamma$ are laid out in Table 2. The top half of the table shows mean levels of schooling by period and by program use for the selected sample discussed in Table 1. Column (1) shows that men who did not use any VA education benefit increased their schooling by 0.65 years, while Column (2) indicates that men who used benefits increased their schooling by 2.03 years. The difference in these two increments, 1.39 years, is the estimated effect of veterans benefits. Note that Table 2 illustrates the importance of controlling for individual characteristics. The difference in the first row of the table indicates that VA program users were more educated than nonusers even before entering the military.

**Table 2.—Educational attainment before and after military service (standard errors in parentheses)**

| **Selected sample (n = 2,388)** | | | |
|---|---|---|---|
| | **No VA** | **Used VA** | **Difference (standard error)** |
| | **(1)** | **(2)** | **(3)** |
| Before | 12.48 | 12.61 | 0.13<br>(0.072) |
| After | 13.13 | 14.64 | 1.51<br>(0.082) |
| Difference<br>(standard error) | 0.65<br>(0.045) | 2.03<br>(0.039) | |
| | Difference-in-differences: | | 1.39<br>(0.060) |
| Vietnam-era enlisted non-draftees (n = 1,506) | | | |
| Before | 11.97 | 12.23 | 0.26<br>(0.072) |
| After | 12.77 | 14.39 | 1.62<br>(0.094) |
| Difference<br>(standard error) | 0.80<br>(0.062) | 2.16<br>(0.050) | |
| | Difference-in-differences: | | 1.36<br>(0.080) |

NOTES: Selected sample described in the notes to Table 1. Educational attainment is years of completed schooling. Variable coding is described in the appendix.

The lower part of Table 2 repeats the differences-in-differences analysis for a more homogenous sample. This sample includes only Vietnam era enlisted men who were not drafted. Here the difference in preservice schooling levels by program users is more pronounced, but the estimate of the effect of program use is nearly identical to that in the larger sample.

Table 3 reports estimates of equations (4), (5), and (6), along with estimates of the undifferenced education equation, (1), and the human capital earnings function, (2). Each equation includes a full set of interaction terms to control for age and years of service using all available information on the SOV tape (there are 18 such interactions).[14] The education equations also include dummy variables to indicate race other than white, Vietnam era service,[15] service as an officer or draftee, marital status or the change in marital status, and whether VA education benefits were used by the respondent.

**Table 3. The effect of veterans benefits on education and earnings (standard errors in parentheses)**

| Regressor | Dependent variable | | | | | |
|---|---|---|---|---|---|---|
| | Highest grade completed | Grade[1] increment | Log 1986 earnings | | | |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| AGE * YRSRV F-Test (df = 18) | 4.30 | 2.36 | 4.44 | 4.05 | 4.09 | 4.04 |
| All races other than white | -0.057<br>(0.111) | 0.055<br>(0.091) | -0.211<br>(0.042) | -0.208<br>(0.042) | -0.207<br>(0.042) | -0.208<br>(0.042) |
| Vietnam | -0.537<br>(0.193) | 0.202<br>(0.159) | 0.055<br>(0.074) | 0.084<br>(0.074) | 0.084<br>(0.075) | 0.084<br>(0.075) |
| Officer | 3.022<br>(0.130) | -0.224<br>(0.107) | 0.284<br>(0.060) | 0.180<br>(0.064) | 0.207<br>(0.065) | 0.180<br>(0.065) |
| Drafted | -0.111<br>(0.102) | -0.265<br>(0.084) | 0.051<br>(0.040) | 0.038<br>(0.040) | 0.029<br>(0.040) | 0.038<br>(0.040) |
| Married/Δ married | 0.049<br>(0.084) | 0.108<br>(0.057) | 0.318<br>(0.033) | 0.322<br>(0.033) | 0.324<br>(0.033) | 0.322<br>(0.033) |
| Use VA benefits | 1.59<br>(0.074) | 1.35<br>(0.060) | | | 0.058<br>(0.029) | -0.002<br>(0.033) |
| Highest grade completed | | | 0.065<br>(0.008) | | | |
| Grade at entry | | | | 0.096<br>(0.010) | 0.085<br>(0.010) | 0.096<br>(0.010) |
| Grade increment | | | | 0.043<br>(0.010) | | 0.043<br>(0.010) |
| $R^2$ | 0.34 | 0.22 | 0.19 | 0.20 | 0.19 | 0.20 |

Notes: Sample described in notes to Table 1. AGE*YRSRV F-Test is an F statistic for the joint significance of a full set of age and years-of-service dummies.

[1]Change in marital Status replaces marital status.

Column (1) of Table 3 reports estimates of the current years of schooling equation, (1), and column (2) reports estimates of the differenced equation, (4). As in Table 2, estimates of the undifferenced

equation indicate that benefit users are roughly 1.6 years more educated than nonusers, and estimates of the differenced equation indicate that benefit users increased their level of schooling by roughly 1.4 years more than nonusers.

Column (3) reports estimates of the human capital earnings function, which shows a return to education of 6.5 percent per year. Column (4) reports estimates of equation (5), which decomposes the return to education into a return to the grade completed when entering the military and a return to the postentry grade increment. Grade at entry is worth 9.6 percent per year, and the grade increment is worth 4.3 percent. The lesser return to the grade increment may be a consequence of the fact that many who attended school after discharge have not been out of school for long on the survey date. Card and Krueger's (1990) finding that the return to education for middle-aged men is virtually constant across levels of schooling suggests that the difference between the return to grade at entry and grade increment may eventually disappear.

The effect of veterans benefits on earnings is given by the product of the grade increment attributable to benefits and the monetary return to the grade increment. This amount is 4.3 * 1.35, or approximately 5.8 percent. Column (5) shows direct estimates of the effect of veterans benefits on earnings, estimated from the reduced form equation, (6). The reduced form estimate, also 5.8 percent, is calculated by replacing the grade increment regressor in equation (5) with a program-use dummy. Column (6) reports the results of adding the program-use dummy to equation (5). The coefficient of -0.002 on the program-use dummy in column (6) shows that, conditional on personal characteristics, entry level schooling, and grade increment, use of veterans benefits is not correlated with earnings. This is important evidence in favor of the model outlined in the previous section.

Table 4a presents estimates of equations (4) and (5) where the effect of veterans benefits on grade increment and the effect of grade increment on earnings are allowed to vary with race, period of service, and type of VA program used. Columns (1) and (2) report grade increment and earnings equations by race.[16] The effect of veterans benefits on grade increment differs little by race, although the grade increment is worth somewhat more to "all races other than white." The sample of races other than white is too small, however, to allow for a statistically significant distinction by race.

Column (3) of Table 4a indicates that the effect of benefit usage on grade increment is virtually identical for men with Vietnam era and early AVF service. Column (4) shows that the effect of grade increment on earnings also differs little by period of service. Column (5) shows the result of separating individual programs in the grade increment equation. Here, the results suggest that the VEAP and other VA programs, less generous than the GI Bill, also lead to a schooling increment lower than that enjoyed by GI Bill users. The distinction between the effects of the GI Bill and other programs is statistically significant.

Table 4b allows the effect of benefit usage to differ by type of training. Column (1) indicates that using veterans benefits to attend college or graduate school is associated with a grade increment of 1.73 years, but using benefits for other types of training leads to no increase in education. The figures in column (3) suggest that men who did not use any VA benefits receive a return to postservice grade increment roughly the same as the return for men who used VA benefits to attend college or graduate school (3.4 versus 4.4 percent). The return to grade increment is negative and imprecisely estimated for benefit users who did not attend college or graduate school. Column (4) reports the reduced form effect of benefit usage. The results here show a 9 percent premium for college and graduate student users, and no premium for users of other VA educational benefits. Column (5) shows that conditional on grade increment there is no effect of benefit usage for benefit users of either type. This suggests that benefit users who did not attend college or graduate school are not rewarded in some way other than through the grade increment.

**Table 4a.—The effect of veterans benefits by age, period of service, and program (standard errors in parentheses)**

| Regressor | | Dependent variable | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Race | Grade increment | Log 1986 earnings | Period | Grade increment | Log 1986 earnings | Program | Grade increment |
| | | (1) | (2) | | (3) | (4) | | (5) |
| Used VA benefits | White | 1.39 (0.064) | | Early AVF | 1.36 (0.292) | | GI Bill | 1.35 (0.060) |
| | All other races | 1.05 (0.173) | | Vietnam | 1.34 (0.062) | | VEAP | 0.690 (0.212) |
| | | | | | | | Other VA | 0.443 (0.166) |
| Grade at entry | White | | 0.095 (0.011) | Early AVF | | 0.083 (0.044) | | |
| | All other races | | 0.108 (0.029) | Vietnam | | 0.096 (0.011) | | |
| Grade increment | White | | 0.038 (0.010) | Early AVF | | 0.061 (0.044) | | |
| | All other races | | 0.075 (0.026) | Vietnam | | 0.042 (0.010) | | |

Notes: Sample described in Table 1. All equations include the same regressors as in the equations reported in Table 3.

**Table 4b.—The effect of veterans benefits by type of training (standard errors in parentheses)**

| Regressor | Type of training | Dependent variable | | | | |
|---|---|---|---|---|---|---|
| | | Grade increment | Log 1986 earnings | | | |
| | | (1) | (2) | (3) | (4) | (5) |
| Used VA benefits | College or grad school | 1.73 (0.06) | | | 0.091 (0.031) | 0.016 (0.047) |
| | Other training | 0.082 (0.087) | | | -0.046 (0.044) | -0.011 (0.056) |
| Highest grade completed | | | 0.065 (0.008) | | | |
| Grade at entry | | | | 0.092 (0.011) | 0.081 (0.010) | 0.091 (0.011) |
| Grade increment | College or grad school | | | 0.044 (0.009) | | 0.040 (0.014) |
| | Other training | | | -0.022 (0.036) | | -0.015 (0.044) |
| | No VA usage | | | 0.034 (0.019) | | 0.035 (0.020) |
| $R^2$ | | 0.32 | 0.19 | 0.20 | 0.19 | 0.20 |

Notes: Sample described in notes to Table 1. Each equation also includes the same covariates as the equations reported in Table 3. 77 percent of VA benefit users attended college or graduate school since their entry to service.

# 4. Two-Stage Least Squares Estimates

Estimates of the effect of veterans benefits on grade increment in Tables 3 and 4 control for components of variance in schooling levels that are correlated with benefit usage. However, if the error term in the differenced equation is also correlated with benefit usage, additional information is needed to identify the effect of veterans benefits. One source of additional information is the restricted eligibility and reduced generosity of the VEAP. For example, VEAP benefits were available only to those veterans who contributed to a VEAP fund while in the service. VEAP eligibility and benefit levels also differed for different entry-level schooling groups. An identification strategy can therefore be developed that uses the transition to VEAP as an instrument for the program-use dummy in equation (4) while controlling for secular entry-level schooling and period-of-service effects.

The TSLS estimation procedure is easy to motivate in a differences-in-differences framework similar to that used to estimate the grade increment equation in Table 2. Consider the following version of the grade increment equation:

$$\nabla E_i = p_i\phi + s_i\psi + d_i\gamma + \xi_i, \tag{9}$$

where $p_i$ is a 0-1 dummy variable that indicates Vietnam or early AVF service, and $s_i$ is a 0-1 dummy variable that indicates having a high school diploma at entry. The differences-in-differences estimate of $\gamma$ in this case is

$$\hat{\gamma} = [(\bar{\nabla e}_{11} - \bar{\nabla e}_{10}) - (\bar{\nabla e}_{01} - \bar{\nabla e}_{00})]/[(\bar{d}_{11} - \bar{d}_{10}) - (\bar{d}_{01} - \bar{d}_{00})], \tag{10}$$

where $\nabla e_{kj}$ is the average grade increment for men who served in period k and had entry-level schooling amount j, and $d_{kj}$ is the corresponding program-use rate.

The rationale for difference-in-differences estimation of equation (9) is the following. Men who served in the Vietnam era were eligible for the GI Bill, while men who served in the early AVF period were more likely to be eligible for VEAP. Because the VEAP was less generous than the GI Bill, and VEAP eligibility was restricted to those who choose to contribute while on active duty, men who served in the early AVF period were less likely to use any sort of veterans educational benefits. But the difference in program use by period of service is much larger for men without a high school diploma because high school graduates were eligible for VEAP kickers that partially eliminated the difference between VEAP and GI Bill benefit levels.[17] The difference-in-differences estimator attributes the change in grade increment by period of service and entry-level schooling solely to entry-level schooling differences in the effect of the VEAP on program use.

To develop a formal motivation for (10), first, note that the difference in the change in program use rates by entry-level schooling is the coefficient on $p_is_i$ in the following equation:

$$d_i = p_i\phi_d + s_i\psi_d + (p_is_i)\kappa + \xi_i\,, \tag{11}$$

Similarly, the difference in the change in schooling by entry-level schooling and period of service is the coefficient on $p_is_i$ in

$$\nabla E_i = p_i\phi_e + s_i\psi_e + (p_is_i)\omega + \xi_i\,. \tag{12}$$

The estimate of $\omega$ in equation (12) is the numerator of the difference-in-differences estimator, (10). The estimate of $\kappa$ in equation (11) is the denominator of the difference-in-differences estimator.

Equations (11) and (12) can be used to show that (10) is a TSLS estimator of the treatment effect, $\gamma$, where the instruments consist of dummy variables for period-of-service and entry-level schooling effects, plus an interaction term for service in the Vietnam era and less than high school at entry. The equivalence to TSLS is easy to see in this case because (11) and (12) are just TSLS reduced form equations. Solving for the structural coefficients from the reduced form produces the difference-in-differences estimate, $\omega/\kappa$. The interaction term, $p_is_i$, is the instrument that identifies $\gamma$ because it is excluded from equation (9).

The statistics underlying equation (10) are laid out in Table 5.[18] The top panel shows the statistics for average postservice grade increment by period of service and entry-level schooling. The grade increment is lower for early AVF veterans regardless of entry-level schooling, but the difference in grade increment by period of service is larger for veterans without a high school diploma at entry. The lower panel shows corresponding statistics for program use. Early AVF veterans were less likely to use VA programs regardless of entry-level schooling, but the difference in program use is larger for those without a high school diploma at entry. The ratio of the grade increment difference-in-differences (-0.285) to the program use difference-in-differences (-0.104) is an estimate of $\gamma$, equal to 2.73 (with a standard error of 2.4).

**Table 5.—Difference-in-differences estimates of the effect of veterans benefits on grade increment (standard errors in parentheses)**

| **Grade increment** | **Early AVF** | **Vietnam** | **Difference (standard error)** |
|---|---|---|---|
| | **(1)** | **(2)** | **(3)** |
| Less than HS at entry | 1.48 | 2.07 | 0.585<br>(0.232) |
| HS or better | 1.09 | 1.39 | 0.300<br>(0.111) |
| Difference<br>(standard error) | -0.393<br>(0.241) | -0.680<br>(0.089) | |
| | Difference-in-differences | | -0.285<br>((0.257)) |
| **Use of VA Benefits** | | | |
| Less than HS at entry | 0.135 | 0.468 | 0.333<br>(0.072) |
| HS or better at entry | 0.381 | 0.610 | 0.229<br>(0.033) |
| Difference<br>(standard error) | 0.246<br>(0.075) | 0.142<br>(0.025) | |
| | Difference-in-differences | | -0.104<br>(0.079) |
| Implied two-stage least squares estimate of the effect of veterans benefits on grade increment: | | | -0.285/-0.104 = 2.73<br>(2.40) |

Notes: Sample same as in Table 1 with the addition of women and 25-29 year olds (n = 2,559).

The estimate of $\gamma$ in Table 5 is not precise, and a more efficient estimation strategy is required to make meaningful comparisons with the estimates in the Table 3.

Efficiency gains are had by interacting the instruments with personal characteristics so as to improve the explanatory power of the first-stage equation. Table 6 reports TSLS estimates for versions of equation (9) that include age and years-of-service main effects, along with the other covariates included in the equations reported in Table 3. Also included are a period-of-service dummy variable, and dummy variables to indicate having a high school diploma or some college at entry to the service. The excluded instruments in this case are interaction terms for period of service with both of the entry-level schooling dummies.

**Table 6.—Two-Stage Least Squares estimates of the effect of veterans benefits on grade increment (standard errors in parentheses)**

| | Expanded sample | | Selected sample | |
|---|---|---|---|---|
| **Regressor** | **(1)** | **(2)** | **(3)** | **(4)** |
| Female (SEX) | 0.026<br>(0.157) | 0.031<br>(0.155) | | |
| All races other than white | 0.021<br>(0.083) | 0.026<br>(0.081) | 0.040<br>(0.087) | 0.044<br>(0.088) |
| Marital status | 0.043<br>(0.075) | 0.055<br>(0.062) | 0.102<br>(0.084) | 0.125<br>(0.068) |
| Officer | 0.385<br>(0.117) | 0.375<br>(0.111) | 0.175<br>(0.123) | 0.168<br>(0.124) |
| Drafted -0.218 | -0.228<br>(0.090) | -0.226<br>(0.083) | -0.253<br>(0.111) | (0.095) |
| Vietnam (VIET) | -0.158<br>(0.279) | -0.104<br>(0.210) | 0.113<br>(0.308) | 0.211<br>(0.224) |
| High school grad at entry (HS) | -0.824<br>(0.137) | -0.798<br>(0.105) | -0.749<br>(0.165) | -0.696<br>(0.119) |
| Some college at entry (COLL) | -1.06<br>(0.191) | -1.02<br>(0.141) | -0.906<br>(0.227) | -0.831<br>(0.156) |
| Used VA benefits | 1.75<br>(0.942) | 1.54<br>(0.614) | 1.10<br>(1.04) | 0.720<br>(0.624) |
| $R^2$ | 0.075 | 0.076 | 0.069 | 0.066 |
| $^2$ (dof) | 10.8 (13) | 15.2 (19) | 7.22 (11) | 11.0 (17) |
| Excluded Instruments | VIET*HS*AGE<br>VIET*COLL*AGE<br>VIET*HS*SEX<br>VIET*COLL*SEX | VIET*HS*AGE<br>VIET*COLL*AGE<br>VIET*HS*YRSRV<br>VIET*COLL*YRSRV<br>VIET*HS*SEX<br>VIET*COLL*SEX | VIET*HS*AGE<br>VIET*COLL*AGE | VIET*HS*AGE<br>VIET*COLL*AGE<br>VIET*HS*YRSRV<br>VIET*COLL*YRSRV |

Notes:All equations include AGE and years-of-service (YRSRV) main effects. Expanded sample is the same as in Table 5 with the addition of veterans with any number of years of service (n = 2,815). The selected sample adds men aged 25-29 to the sample in Table 1 (n = 2,477). Excluded instruments for columns (1) and (3) include the interactions of high school at entry and college at entry dummies with a Vietnam-era service dummy; each education-service interaction is also interacted with age and sex. Excluded instruments for columns (2) and (4) also include interactions with years of service.

The estimates in columns (1) and (2) of Table 6 were computed using a sample expanded to include women and veterans aged 25 to 29 with any length of service. The selected sample used to produce the estimates in columns (3) and (4) is the same as in Table 1 with the addition of men aged 25 to 29. The instrument list for the expanded sample, which includes female veterans, also includes interactions of the period-of-service/entry-level schooling interactions with a sex dummy. To produce the estimates in columns (1) and (3), the instrument list was further expanded by interacting the period-of-service/entry-level schooling interaction terms with age dummies, so that the reduced form effect of the excluded instruments is free to vary with age. Columns (2) and (4) show the results of expanding the instrument list to include interactions of the excluded instruments with length-of-service dummies as well as with age dummies.

The TSLS estimates of the effect of veterans benefits in Table 6 are remarkably similar to those in Table 3. The estimates range from 0.720 in column (4), to 1.75 in column (1). Column (2) shows an estimate of 1.54 with a standard error of 0.614, the most precisely estimated treatment effect in the table. Finally, Table 6 also reports the chi-square test statistic for instrument-error orthogonality. In no case does the test statistic exceed its degrees of freedom. Overall, these results suggest that estimates of the effects of benefit usage on grade increment are not an artifact of program eligibility rules or self-selection.[19] It should be noted, however, that TSLS estimates based on the transition from the GI Bill to VEAP probably include a mixture of pure program-use effects and effects arising from the use of a less generous program.

# 5. Summary and Conclusions

Educational subsidies for veterans constitute the largest single federal program of student aid. The impact of veterans benefits on education is estimated here by focusing on the postservice grade increment, a strategy that controls for individual effects in the level of education. The use of veterans benefits is associated with a postservice grade increment of roughly 1.4 years. The effect of veterans benefits on earnings is estimated by decomposing the return to education into a return to grade completed at entry, and a return to postservice grade increment. The grade increment is worth roughly 4.3 percent so that use of veterans benefits raises earnings by around 6 percent. This premium appears to accrue primarily to the 77 percent of benefit users who attended college or graduate school.

Two-Stage Least Squares estimates of the effect of veterans benefits on grade increment are also computed. The excluded instruments in this case are interactions between period of service and entry-level schooling. Use of interaction terms as instruments exploits the variance in program use by period of service while controlling for secular period-of-service and entry-level schooling effects. TSLS estimates of the grade increment equations are remarkably similar to the OLS estimates.

The 6 percent premium for benefit users is an important part of the compensation package for veterans, but it does not appear to be enough to overcome the average 15 percent earnings loss to veterans of the Vietnam era (Angrist 1990). Another important question is whether veterans benefits are a cost-effective form of compensation. To answer this requires a detailed study of the costs of administering veterans programs, the tuition and opportunity cost of schooling, and the offset of program costs through higher tax payments from more educated workers. A crude calculation, however, shows that discounted at 10 percent per year, the 36-month total GI Bill payment was worth $10,209 in 1978 and $17,151 in 1986. Evaluating the 6 percent premium for benefit users at the average 1986 earnings of veterans gives an annual value of $1,708. Over a 30-year working life this premium has a discounted 1986 dollar value of $17,717. These simple calculations suggest that veterans benefits may not be socially wasteful.

# Notes

[1]Magnum and Ball (1989) investigate the effect of training provided while in the military.

[2]Background material is drawn from the Veterans Administration (1978, 1988) and the Department of Veterans Affairs (1990).

[3]GI Bill eligibility for all Vietnam veterans terminated in 1989.

[4]The 1979 kickers were originally introduced as part of the RAND Multiple Option Recruiting Experiment (MORE), in which alternative benefit packages were randomly assigned to Armed Forces Entrance and Examining Stations (AFEES). Shortly after the MORE began, however, kickers were made available to eligible recruits at most of the AFEES (Fernandez 1982).

[5]Eligibility was further restricted to those entering certain occupations while in the military.

[6]Angrist and Krueger (1991) present evidence that schooling is not correlated with the error term in human capital earnings functions.

[7]Griliches and Mason (1972) separately estimate the returns to entry-level schooling and the post-service schooling increment for a sample of veterans surveyed in 1964. They argue (p. S82) that grade increment is uncorrelated with personal background variables and ability, so that estimates based on the schooling increment are close to those that would arise from an experiment designed to estimate the returns to schooling. On the other hand, model (4) may be inaccurate because veterans who served in different periods used different programs. In this case, OLS estimates of $\gamma$ in the grade increment equation converge to a weighted average of the underlying population treatment effects (Heckman and Robb 1985).

[8]The 1987 survey was the third survey of veterans. An earlier survey was conducted in 1979, and a telephone survey was conducted in 1977. Other sources of information on veterans include the Current Population Survey veteran supplements in September 1989, November 1987, and April 1985. The 1979-87 National Longitudinal Survey of Youth (NLSY) and the 1966-1981 National Longitudinal Survey of Young Men panel data sets also interviewed veterans, although the NLSY military subsample was dropped in 1984.

[9]See Department of Veterans Affairs (1989a) for details and exceptions to this rule.

[10]The SOV questionnaire collects information on single years of age, and on the exact years of entry to and exit from the military.

[11]The period of service recodes differ somewhat from individuals self-reported period of service in that individuals who claim only reserve duty in a period are listed with service in the period. In cases where individuals have service in more than two periods, one of which includes a war, the recodes indicate only the wartime service. This should have no impact on a sample restricted to Vietnam and Early AVF veterans (personal communication with Steve Dienstfrey, Department of Veterans Affairs).

[12]Statistics are unweighted. The SOV includes a sampling weight derived from the CPS. Results proved insensitive to weighting, and so only unweighted estimates are reported.

[13]The breakdown of VA program usage should be treated with caution. Census Bureau experience with the CPS Veterans Supplement suggests that veterans do not distinguish accurately between the different VA programs (personal correspondence with Sharon Cohany, Bureau of Labor Statistics). There is a tendency to refer to all veterans educational benefits as "the GI Bill."



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[14]All interactions of these timing variables are included because a potentially important covariate that is not on the tape is the time since discharge from the military.

[15]In this and subsequent tables, Vietnam era service is coded directly from the SOV questionnaire and not from the VA recode.

[16]Regressors other than the program-use dummy in equation (4), and grade at entry and grade increment in equation (5), are not allowed to vary by race.

[17]In present discounted value terms, VEAP benefit levels were roughly 20 to 30 percent of GI Bill benefit levels for a veteran with no dependents. But VEAP with a 3,000 dollar kicker was around half as generous as the GI Bill, and VEAP with a 6,000 dollar kicker plus a 3,000 dollar "combat arms" bonus gave a benefit level nearly comparable to GI Bill benefit levels (Fernandez 1980, Tables 3 and 5).

[18]To increase the number of early AVF veterans, the sample underlying this table includes 25-29 year old and female veterans as well as members of the sample used in Table 1.

[19]Earnings equation results from the expanded sample are similar to those in the selected sample used in Table 3. The return to grade at entry is .090 (.011) in the expanded sample, and the return to grade increment is .036 (.009). The reduced form benefits effect is 0.043 (0.029).

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# Appendix
# SOV III Variables

## Grade at entry and grade completed

Grade at entry is coded from SOV public use variables Q15a and Q15b. Q15a equals 2 through 6 to identify 8 or less and 9 to 12 years of school completed. Q15a equals 7 to identify some post high school vocational training and 8 through 13 to identify 13 to 18 years of school. Q15a = 7 was coded as 13 years of school. Q15b indicates the level of certification at entry. When Q13b indicated a Ph.D., years of schooling at entry was coded as 20. Grade completed on the survey date was coded similarly from Q15c and Q15d. It should be noted that the results were insensitive to the exclusion of veterans with vocational training.

## Miscellaneous variables

Most variables in the extract were coded directly from SOV-III questionnaire responses. As noted in the text, the sample was selected on the basis of VA period of service recodes (PSER_02, PSER_07 and PSER_08). Vietnam and early AVF veterans were identified in the extract on the basis of questionnaire responses (Q4c8 and Q4c9). Program use variables were coded from Q39e. A respondent was coded as having used VA education programs if he or she used the GI Bill (Q39e5 = 1), the VEAP (Q39e6 = 1), or some other VA education program (Q39e7 = 1 or Q39e8 = 1).



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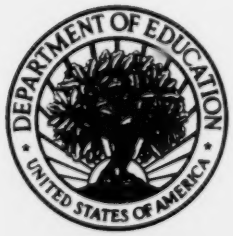


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